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Infant Illness and Mortality Rates



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Public Health Reports

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ILLNESS AMONG INFANTS, WITH COMPARATIVE MORTALITY DATA¹

By SELWYN D. COLLINS, *Head Statistician, Public Health Service*

There has been little attempt to measure the extent of illness among infants under 1 year of age. With the considerable number of premature infants and of artificially fed infants for whom it is difficult to secure a satisfactory formula, the absence of records of illness may reflect the difficulty of determining when the baby is sick. With the increasing consultations for well and near-well babies at clinics and in physicians' offices, a visit to a doctor is no longer an indication of illness of the infant.

In spite of these difficulties, there have been attempts to record illnesses of infants by family canvasses. In connection with surveys of illness among unselected families in the general population over the past two decades, the Public Health Service has assembled a considerable mass of information on the frequency of illness among infants. As among children and adults, the illnesses recorded in periodic family canvasses are no doubt an incomplete statement of the total sickness which actually occurs; particularly is this true of colds and minor respiratory diseases. However, it is of interest to consider the extent of illness and the diagnoses most frequently reported among infants.

In contrast to the extremely meager data on illness among infants, most civilized countries have tabulated and published detailed data on the mortality of infants. Since the number of births during a year gives a good population base for the computation of infant mortality rates, there is not the difficulty experienced in general mortality of securing adequate annual population estimates. Thus, infant mortality has been computed and published by calendar months, by sex, by age of the infant, and for specific causes, over long periods of years. In the United States the birth registration area was established in 1915, but it was 1933 before all of the States were admitted to it. However, nearly all of the States were in the area by 1927 so that the trend of infant mortality over approximately two decades is now available for the country as a whole and for most of the States.

¹ From the Division of Public Health Methods, Public Health Service.

TABLE 1.—Incidence of illness from broad causes among white male and female infants under 1 year of age in each of five family surveys
[Sole or primary causes only]

	Annual case rate per 1,000 infants					Number of cases					Infant population	
	All diseases and injuries	Respiratory diseases	Digestive diseases	Communicable diseases	All other diseases and injuries	All diseases and injuries	Respiratory diseases	Digestive diseases	Communicable diseases	All other diseases and injuries	Years of life	Number of infants
Both sexes:												
130 communities: ¹												
12-month families.....	1,342	561	234	175	372	1,326	554	231	173	368	988.2	1,693
3- to 11-month families.....	1,291	541	218	105	428	160	67	27	13	63	123.9	310
Syracuse, N. Y. ¹	1,345	727	194	170	255	111	60	16	14	21	82.5	195
Cattaraugus County, N. Y. ¹	1,914	930	561	176	248	348	169	102	32	45	181.8	414
Hagerstown, Md. ¹	1,580	869	177	320	214	562	309	63	114	76	355.7	534
Males:												
130 communities: ¹												
12-month families.....	1,482	614	229	184	455	726	301	112	90	223	489.9	852
3- to 11-month families.....	1,464	666	266	50	483	88	40	16	3	29	60.1	149
Syracuse, N. Y. ¹	1,429	687	192	220	330	52	23	7	8	12	36.4	89
Cattaraugus County, N. Y. ¹	1,753	904	529	69	221	159	82	48	9	20	90.7	216
Hagerstown, Md. ¹	1,665	949	179	283	244	307	175	33	54	45	184.4	277
Females:												
130 communities: ¹												
12-month families.....	1,204	508	239	167	291	600	253	119	83	145	408.3	841
3- to 11-month families.....	1,129	423	172	157	376	72	27	11	10	24	63.8	161
Syracuse, N. Y. ¹	1,280	709	195	130	195	59	35	9	6	9	46.1	106
Cattaraugus County, N. Y. ¹	2,075	955	593	252	274	189	87	54	23	25	91.1	198
Hagerstown, Md. ¹	1,489	782	175	350	181	255	134	30	60	31	171.3	257

For notes and further details, see table 2.

SOURCE AND CHARACTER OF DATA

The data for this study are taken from five different illness studies conducted by periodic canvasses of families within the past 25 years. Footnotes to table 2 give references that discuss the general setting of each study but they do not contain data on illness among infants. In each survey the families were visited at intervals of 2 to 4 months and a record made of any illness of any member of the family which had occurred since the preceding visit. The record included sickness of infants which was tabulated by month of age and related to a careful count of the infants under observation at each month of age up to 12 months. The record of illness of infants as presented in this study is carried only through the first year of life and thus corresponds to the concept of infant mortality which pertains only to the first 12 months of life.

Table 1 shows illness rates for infants as recorded in each of the five studies, for all causes and for four broad disease groups. The illness rate from all causes among infants of all ages varies in the different studies from about 1,300 to 1,900 per 1,000 full-time years of infant observation. While there is large variability in each of the broad diagnosis groups as between the different studies, it should be

TABLE 2.—Age incidence of illness from all causes among white infants in each of 5 family surveys

[Sole or primary causes only]

	Total under 1 year	Age in completed months				
		Under 1	1-2	3-5	6-8	9-11
Annual case rate per 1,000 infants						
130 communities: ¹						
12-month families (1928-31).....	1,342	2,273	912	1,241	1,389	1,375
3- to 11-month families (1928-31).....	1,291	1,488	1,068	1,143	1,706	1,047
Syracuse, 18 months (1930-31) ²	1,345	2,137	1,393	1,037	1,088	1,656
Cattaraugus County, 33 months (1929-32) ³	1,914	3,551	1,591	1,716	1,905	1,786
Hagerstown, 28 months (1921-24) ⁴	1,580	1,417	810	1,518	1,844	1,946
Number of cases						
130 communities: ¹						
12-month families (1928-31).....	1,326	154	128	299	376	369
3- to 11-month families (1928-31).....	160	16	21	38	57	28
Syracuse, 18 months (1930-31) ²	111	15	18	22	24	32
Cattaraugus County, 33 months (1929-32) ³	348	55	49	79	83	82
Hagerstown, 28 months (1921-24) ⁴	562	42	48	135	164	173
Population (full-time years of life)						
130 communities: ¹						
12-month families (1928-31).....	988.2	67.75	140.41	241.00	270.66	268.41
3- to 11-month families (1928-31).....	123.9	10.75	19.66	33.26	33.46	26.75
Syracuse, 18 months (1930-31) ²	82.5	7.02	12.92	21.22	22.05	19.32
Cattaraugus County, 33 months (1929-32) ³	181.8	15.49	30.79	46.05	43.56	45.91
Hagerstown, 28 months (1921-24) ⁴	355.7	29.65	59.28	88.92	88.92	88.92

For description of surveys see following references:

¹ Collins (7, 8).

² Randall (11), Sydenstricker and Collins (4, 13).

³ Sydenstricker (12).

remembered that some of these studies represent relatively few infants; the order of magnitude of the rates seems sufficiently similar in the different groups to justify a combination of all five studies in an attempt to secure observations on a sufficient number of infants to give reasonably reliable rates.

Table 2 shows rates of illness from all causes among infants of various ages in the first year of life. In spite of small numbers the general pattern is rather consistently maintained of a high illness rate in early infancy, with lower rates thereafter.

TREND OF INFANT MORTALITY

No data are available on the trend of illness among infants. According to the surveys reported here, infants under 1 year had an illness rate of 1,447 cases per 1,000 years of life. Of this total, 669 cases per 1,000 were respiratory diseases, largely minor but including pneumonia which is not negligible among infants. Congenital malformations and the diseases peculiar to early infancy were recorded to the extent of only 56 cases per 1,000, leaving 722 cases per 1,000 due to miscellaneous causes.

In the absence of any data on the trend of infant sickness, the trend of infant mortality over the past 30 years may be considered. The use of these mortality data are not intended to suggest that sickness rates have shown the same trend but they do throw light on developments during the past three decades.

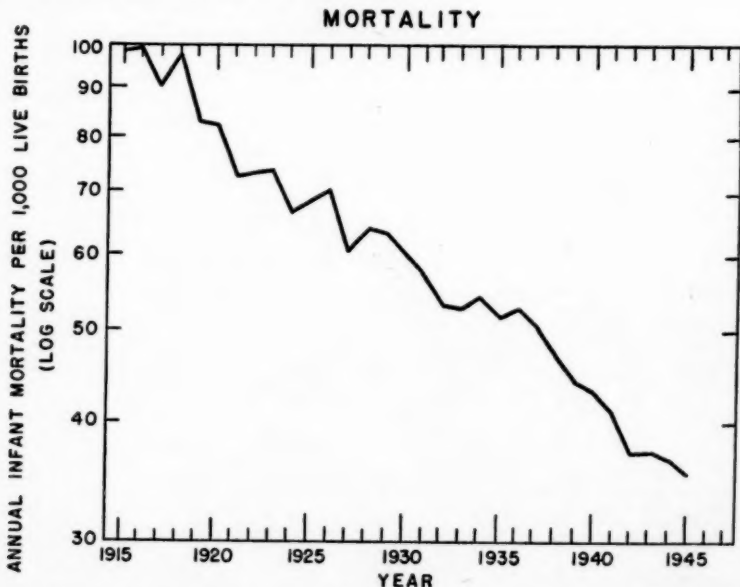


FIGURE 1.—Trend of mortality among white infants under 1 year of age in the United States birth registration area, 1915-45. (Data from references 10, p. 574 and 16, vol. 24 No. 1, and vol. 26 No. 1.)

The birth registration area in the United States was organized in 1915. Figure 1 shows the trend of infant mortality from all causes among white infants from 1915 to 1945, the last available year. In the few States in the area in 1915 the deaths under 1 year of age per 1,000 live births amounted to just under 100. The trend of the rate has been consistently downward until in 1943 it was only 37.5 and in 1945 it was 35.6. Of the rate of 35.6 per 1,000 in 1945, 23.2 per 1,000 were deaths due to congenital malformations and diseases peculiar to early infancy, including prematurity and other conditions largely due to prenatal influences. Mortality due to congenital malformations and diseases of early infancy has not decreased so much in the past generation, but deaths due to other causes have decreased rapidly to a rate of only 12.4 per 1,000 live births in 1945.

Figure 2 shows similar trends since 1927 for each sex, for different geographic sections of the United States, and for infants of different ages.

Considering geographic region, the rates for white infants have declined rather rapidly in all five sections shown on the chart. However, the Mountain States have shown a consistently high infant mortality and the Southern States have shown a mortality definitely higher than in the Northeast, North Central, and Pacific sections. Throughout the years covered, and particularly since 1937, these latter three sections have shown rates that were about the same.

Considering infant mortality by sex for the country as a whole, the trends for male and female infants have been approximately parallel, but the mortality of male infants has been consistently higher than that of female infants. In this and other charts shown here, 1927 is slightly below 1928 and 1929. Reference to figure 1 will indicate that this has no significance, except possibly that 1928 and 1929 reflect some excess mortality from influenza and pneumonia during those years which included an epidemic.

There are important differences in the trends of mortality among infants of different ages of the first year of life. For many years prior to the period covered in figure 2, the mortality of early infancy had remained approximately the same (9). Mortality at these early ages was due predominantly to congenital malformation, injury at birth, prematurity, and some ill-defined conditions. Particularly stationary was the mortality of the first day of life, but taken as a whole the rate for the first month of life also showed little decline. In figure 2 more detailed age groups are shown; mortality under the first day of life showed no decline prior to 1937 but from that year to 1945, the last available data, there was a consistent decline even for this age group. For the other 6 days of the first week of life the decline began earlier, about 1930, and continued rather consistently downward

through 1945. Mortality during the remainder of the first month of life and up to 6 months of age showed considerably more rapid declines from 1936 to 1945 than was true of either of the age periods of the first week of life. In the two quarters of the last half of the first year of life the trends have been rather consistently downward throughout the period shown in figure 2.

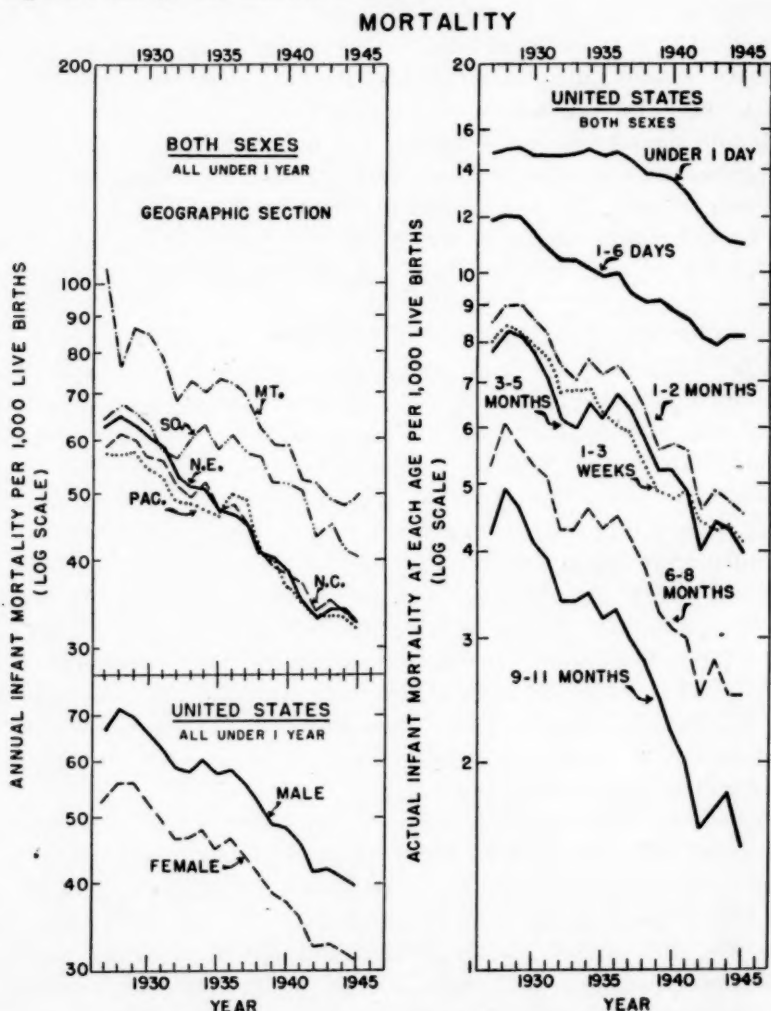


FIGURE 2.—Trend of mortality among white infants: (a) in five geographic sections; (b) among male and female infants; and (c) among infants of different ages—United States birth registration area, 1927-45. (Data by geographic section computed from reference 15; data by age from references 10, p. 574 and 16, vol. 17 No. 17, vol. 19 No. 11, vol. 21 No. 12, vol. 25 No. 12, vol. 27 No. 12; data by sex from references 14 and supplementary data, and 16, vol. 24 No. 1, and vol. 26 No. 1. The geographic sections in terms of standard U. S. Census sections are: N.E. (Northeast)=New England and Middle Atlantic; N. C. (North Central)=East and West North Central; S.O. (South)=South Atlantic and East and West South Central; M.T.=Mountain; P.A.C.=Pacific. In the Mountain region and in Texas the data are corrected to include Mexicans with white for the years 1930-36, as they are included in other years; in other sections and in the United States as a whole, no correction is needed because Mexicans are a very small percentage of the population.)

TABLE 3.—*Age incidence of illness from all causes and from respiratory and nonrespiratory diseases among white infants in five family surveys*¹
[Sole or primary causes only]

Disease group	Age in completed months												
	Under 1		1	2	3	4	5	6	7	8	9	10	11
	Annual case rate per 1,000 infants												
All causes.....	1,447	2,168	874	1,130	1,387	1,304	1,304	1,593	1,490	1,533	1,499	1,551	1,517
Respiratory diseases.....	669	337	307	490	715	659	730	887	802	690	804	799	695
Nonrespiratory diseases.....	778	1,822	568	641	672	645	574	707	677	843	695	753	822
Number of cases													
All causes.....	2,507	282	114	150	194	186	193	239	225	240	233	235	216
Respiratory diseases.....	1,159	44	40	65	100	94	108	133	122	108	125	121	99
Nonrespiratory diseases.....	1,348	238	74	85	94	92	85	106	103	132	108	114	117
Infant population observed													
Full-time years of life.....	1,732.1	130.7	130.4	132.7	139.8	142.6	148.0	150.0	152.0	156.6	155.4	151.5	142.4
Number of individual infants.....	3,146	1,567	1,564	1,592	1,677	1,712	1,775	1,800	1,825	1,879	1,866	1,818	1,709

¹ For details about surveys see table 2.

AGE VARIATION, ALL CAUSES

Although infancy represents only a 12-month period, it is a time of great change in the resistance of the infant to sickness and mortality. It seems worth while, therefore, to consider illness and death rates at different periods of the first year of life.

Figure 3 shows illness rates for each month of the first year of life (table 3). The left half shows all causes. These rates are on an annual basis, which means that each rate represents the cases that would occur in the course of a year if the average daily number for the given age-period continued throughout the year. While this adjustment is not important when the rates are computed for monthly or other intervals of approximately the same length, it is very important when the length of the interval varies.

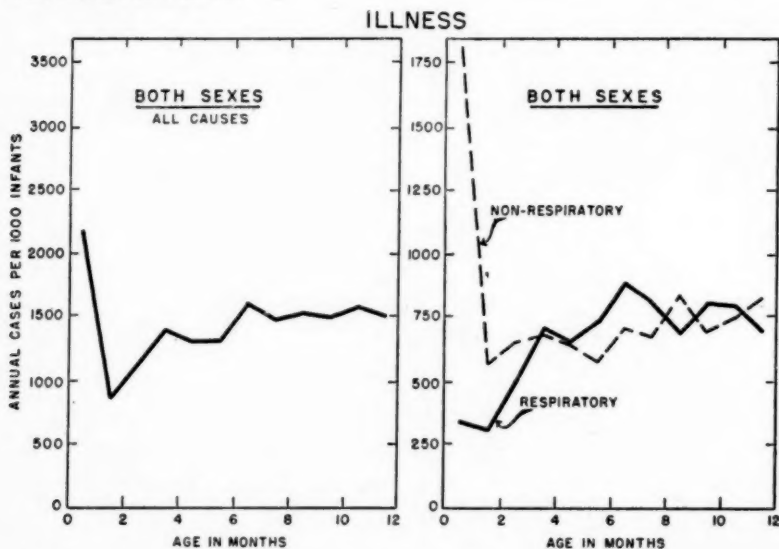


FIGURE 3.—Incidence of illness from all causes and from the two main causes among white infants of each month of age—five family surveys made by the Public Health Service.

Illness from all causes starts with a rather high rate for the first month of life and drops to the lowest rate in the second month, followed by a gradual increase to a level (annual basis) of about 1,500 cases per 1,000 throughout the last half of the first year of life. The right half of the figure divides illnesses into the two major groups of respiratory and nonrespiratory whose average rates for the year as a whole are roughly the same. As might have been expected, the non-respiratory diseases account for all of the high rate under 1 month of age. Later charts with more specific causes will indicate that this high peak is due to congenital malformations and the diseases peculiar to early infancy.

Figure 4 shows somewhat similar data for mortality (table 4). The data on illness were too few to break down further than the first month of life. However, the data on mortality are plotted in figure 4 for the ages under 1 week, 7 to 29 days, and by single months to the end of the first year of life. The mortality under 1 week of age greatly exceeds the point plotted on the chart and the rate has been printed on the chart. These rates are on an annual basis so that a rate of 993 for under 1 week of age would mean that if infants continued to die throughout the first year of life at the same average number per day as during the first seven days of life, practically all of them would

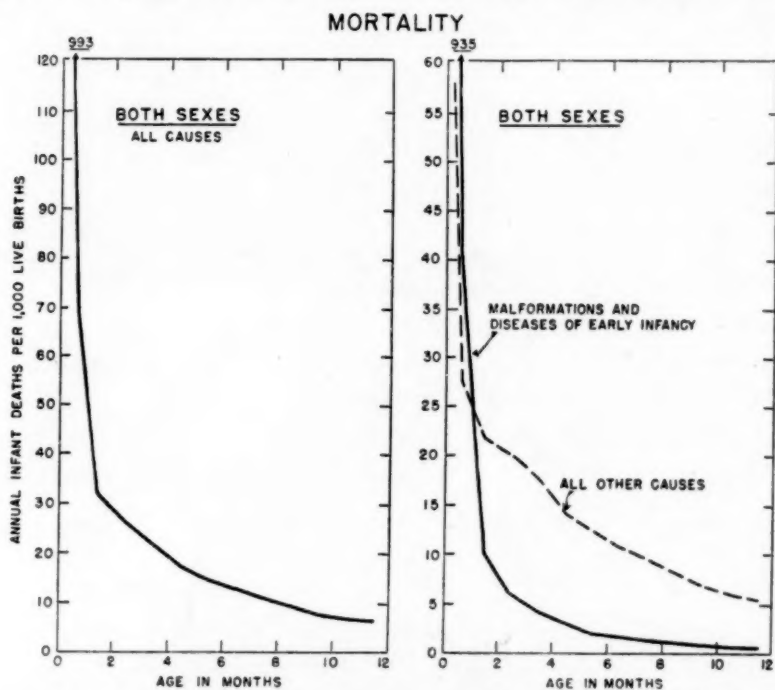


FIGURE 4.—Mortality from all causes and from the two main causes among white infants of each month of age—United States, 1943.

be dead by the end of the first year of life. If the annual rate exceeded 1,000 per 1,000, it would mean that all of the infants would die before the end of the first year of life if they continued to die at the same average number per day as during the first week of life. Annual rates have been computed in this study because they better represent the true rate of mortality in one age-period as compared with another age-period of the first year of life.

Considering both sexes, the death rate varied from 993 per 1,000 for the first week of life to 6 per 1,000 for the eleventh or last month of infancy. When rates are plotted for the two main causes of infant

TABLE 4.—Annual¹ infant mortality from two broad causes among white male and female infants of specific ages in the continental United States, 1943

Age in days and completed months	All causes			Malformations and early infancy (157-161)			All other causes		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
Annual ¹ infant mortality per 1,000 live births									
Total under 1 year.....	37.5	42.0	32.7	23.5	26.5	20.4	13.9	15.5	12.3
Under 1 day.....	4,097.0	4,653.6	3,507.6	3,970.0	4,509.0	3,399.3	126.9	144.6	108.3
1-2 days.....	916.5	1,065.8	758.5	852.2	986.6	709.8	64.4	70.2	48.7
3-6 days.....	255.8	295.8	213.3	218.4	252.6	182.3	37.3	43.2	31.1
Under 7 days.....	992.8	1,137.7	839.3	934.9	1,069.8	792.2	67.8	67.9	47.1
7-29 days.....	68.5	75.5	61.1	40.8	44.2	37.3	27.7	31.3	23.8
Under 1 month.....	284.1	323.3	242.6	249.5	283.5	213.4	34.7	39.8	29.2
1 month.....	32.0	36.6	27.1	10.2	11.4	8.9	21.8	25.2	18.2
2 months.....	26.2	29.1	23.1	6.1	6.6	5.6	20.1	22.6	17.5
3 months.....	21.7	23.5	19.8	4.3	4.5	4.1	17.4	19.0	15.7
4 months.....	17.2	18.6	15.6	3.1	3.0	3.1	14.1	15.6	12.5
5 months.....	14.6	16.1	13.0	2.2	2.4	2.0	12.4	13.7	11.0
6 months.....	12.7	13.5	11.9	1.9	1.8	2.0	10.8	11.7	9.9
7 months.....	10.9	11.9	9.7	1.5	1.6	1.5	9.3	10.4	8.2
8 months.....	9.5	10.1	8.9	1.2	1.2	1.2	8.3	8.9	7.6
9 months.....	7.8	7.9	7.6	1.0	1.0	1.0	6.8	6.9	6.6
10 months.....	6.8	7.1	6.5	.7	.8	.7	6.1	6.3	5.8
11 months.....	6.3	6.3	6.2	.7	.7	.8	5.5	5.6	5.4

¹ Annual rates as here used mean the number of deaths per 1,000 live births that would have occurred in 360 days if the deaths per day for the given age period had continued for a year of 12 30-day months. The number of live births for the whole year was: both sexes 2,594,763; male 1,334,563; female 1,260,200.

mortality, malformations and diseases of early infancy are seen to be the major factor in the high peak for under 1 week of age but there is a rather high peak also for other diseases.

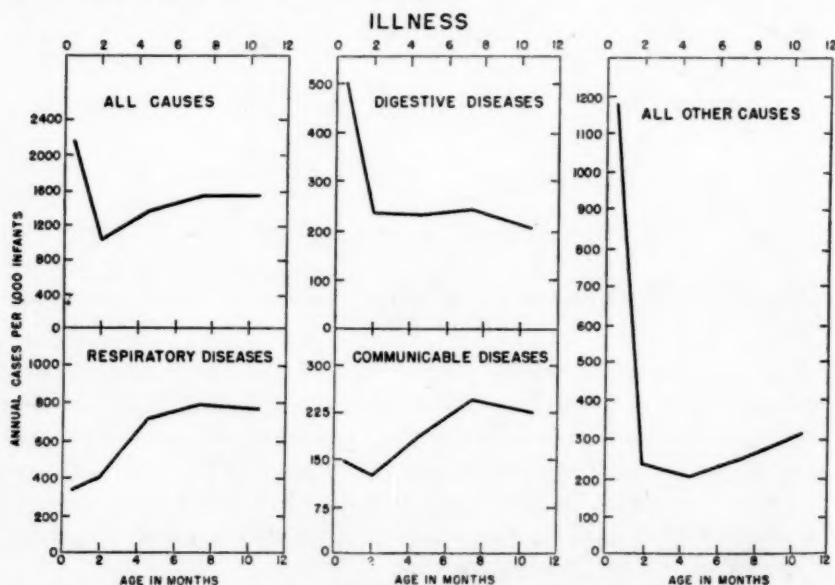


FIGURE 5.—Incidence of illness from broad disease groups among white infants of specific ages—five family surveys. (Ages in months: under 1, 1-2, 3-5, 6-8, 9-11. Scales so arranged that rate for both sexes of all ages under 1 year plots on the vertical rate scale at a distance equal to 6.7 months on the horizontal age scale, thus making the curves comparable on a relative basis.)

BROAD CAUSES OF ILLNESS AND MORTALITY

Figure 5 shows illness rates during the first year of life for four broad causes for the ages under 1 month, 1-2 months, and for the next 3 quarters of the first year of life (table 5). Figure 6 shows similar curves for five important causes of mortality during the first year of life (table 6). Because of the larger amount of data on mortality for the total United States, rates under 1 month of age have been divided into two parts, under 7 days and 7-29 days, with rates above 1 month in the same age groups as in the morbidity chart. With the exception of digestive diseases, which has a low rate for the period under 1 week of age, the death rates from all four causes decline rapidly as age increases. On the other hand, illness from at least two causes increases with age, the lowest rates occurring in the early age groups for both respiratory and communicable diseases. However, digestive and the miscellaneous other diseases show high illness rates in the first month of life.

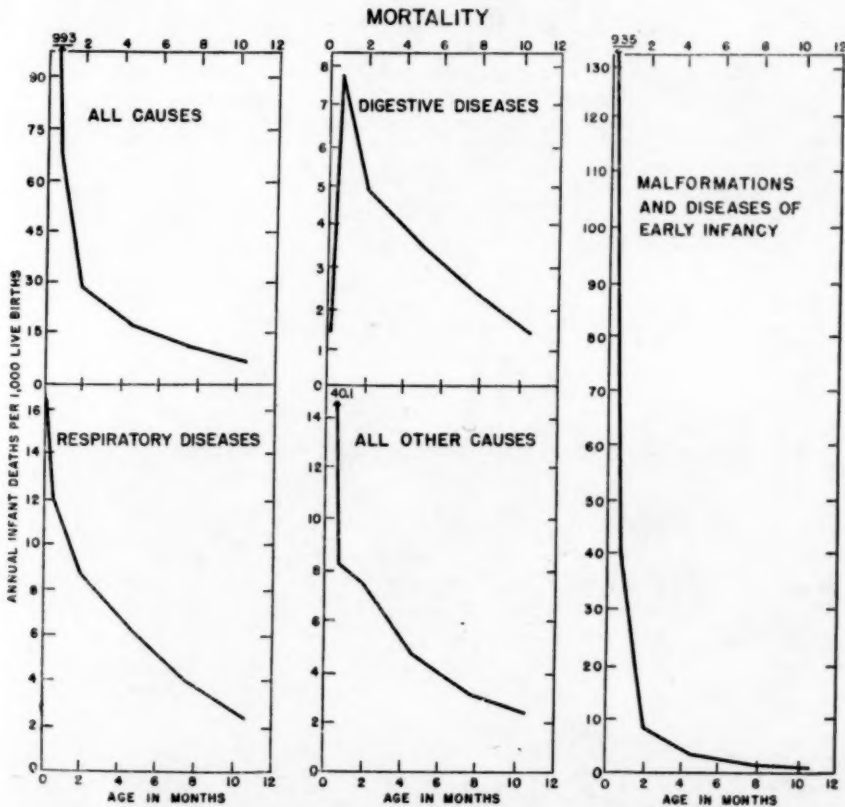


FIGURE 6.—Mortality from broad disease groups among white infants of specific ages—United States 1943. (Ages: under 7 days; 7-29 days; and in months, 1-2, 3-5, 6-8, 9-11. See fig. 5 for other details.)

TABLE 5.—Age incidence of illness from broad causes among white infants of each sex in 5 family surveys¹
[Sole or primary causes only]

	Total under 1 year	Age in completed months					Total under 1 year	Age in completed months				
		Un- der 1	1-2	3-5	6-8	9-11		Un- der 1	1-2	3-5	6-8	9-11
All causes: Both sexes Male Female Respiratory diseases: Both sexes Male Female Digestive diseases: ² Both sexes Male Female Communicable diseases: Both sexes Male Female All other diseases and in- juries: ² Both sexes Male Female	Annual case rate per 1,000 infants						Number of cases					
	1, 447	2, 158	1, 004	1, 331	1, 535	1, 522	2, 507	282	264	573	704	684
	1, 546	2, 572	996	1, 488	1, 568	1, 599	1, 332	169	130	317	356	360
	1, 350	1, 740	1, 011	1, 178	1, 503	1, 446	1, 175	113	134	256	348	324
	669	337	399	702	792	768	1, 159	44	105	302	363	345
	723	411	414	817	863	764	623	27	54	174	196	172
	616	262	385	589	721	772	536	17	51	128	167	173
	253	505	239	237	246	211	439	66	63	102	113	95
	251	533	261	225	229	209	216	35	34	48	52	47
	256	477	219	248	263	214	223	31	29	54	61	48
	200	145	125	186	244	227	346	19	33	80	112	102
	190	167	77	211	198	235	164	11	10	45	45	53
	209	123	174	161	289	219	182	8	23	35	67	49
	325	1, 171	239	207	253	316	563	153	63	89	116	142
382	1, 461	245	235	278	391	329	96	32	50	63	88	
269	877	234	179	229	241	234	57	31	39	53	54	
Fulltime years of life						Number of individual infants						
Male	861.5	65.7	130.5	213.1	227.0	225.2	1, 583	788	792	887	937	935
Female	870.6	65.0	132.6	217.3	231.6	224.1	1, 563	779	809	893	957	940

¹ For details about surveys see table 2.

² Teething and gum inflammation is included in "all other" and not in "digestive."

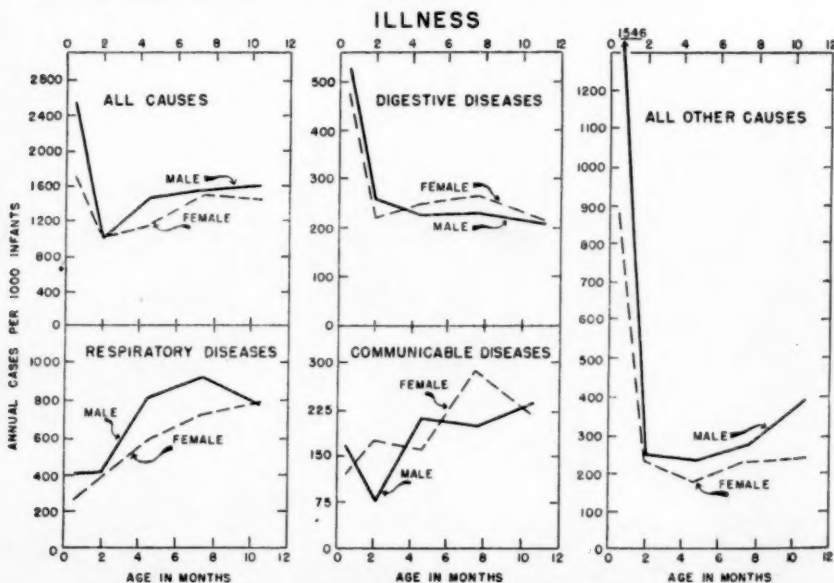


FIGURE 7.—Incidence of illness from broad disease groups among white male and female infants of specific ages—five family surveys. (Ages in months: under 1, 1-2, 3-5, 6-8, 9-11. See fig. 5 for other details.)

Figures 7 and 8 show similar data for male and female infants. Considering first mortality from all causes, it has been repeatedly noted that the death rate for males even in the first year of life is consistently above that of females. Reference to table 4 will indicate that this is consistently true when the mortality under 1 month is broken into finer age groups and is also true for each of the 12 months of life taken separately. The relative age incidence of illness from all causes is different from that of mortality, but the illness rates for males are rather consistently above those for females, the only exception being that the rate is slightly higher for females in the age period 1-2 months.

Considering the four broad causes of death shown in figure 8 the mortality of males is consistently higher than that of females, with the exception of congenital malformations and diseases of early infancy in the last half of the first year of life when the rates are

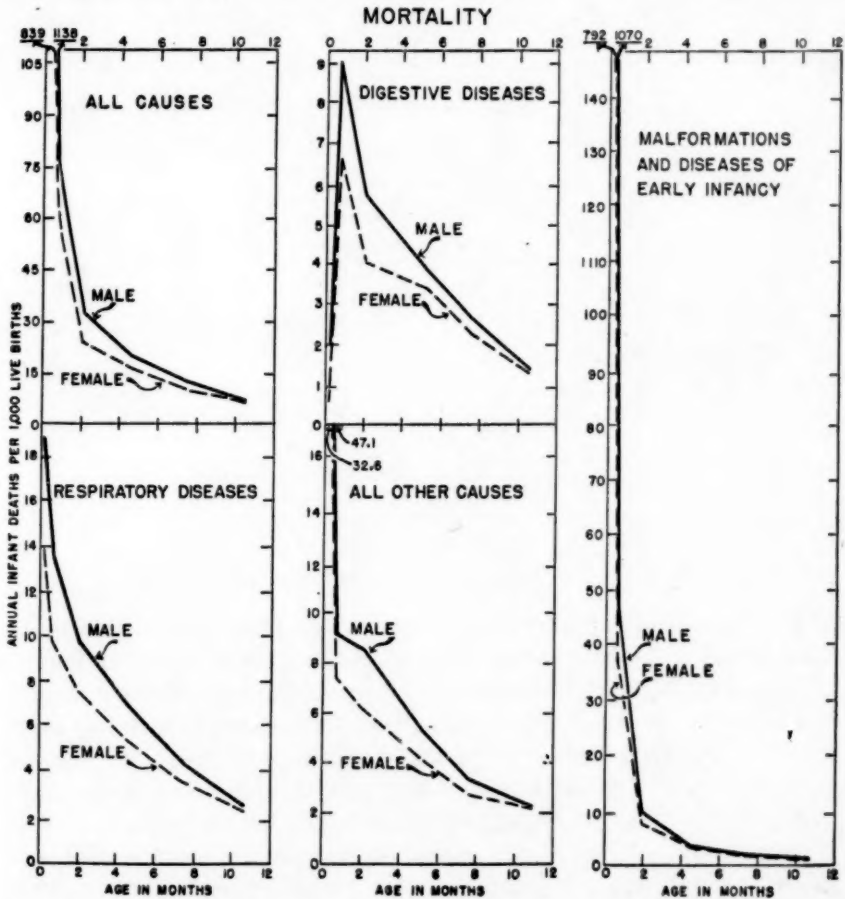


FIGURE 8.—Mortality from broad disease groups among white male and female infants of specific ages—United States, 1943. (Ages: under 7 days; 7-29 days; and in months, 1-2, 3-5, 6-8, 9-11. See fig. 5 for other details.)

approximately the same. Considering the four broad causes of illness shown in figure 7, there is more variation with respect to sex differences in the rates. For digestive diseases the rates for males exceed those for females only in the first quarter of the first year of life, with higher rates for females in the other three quarters. The rather irregular curves for the communicable diseases indicate no particular sex differences for this group as a whole. However, for respiratory diseases and for all other causes the illness rates for males are rather consistently above those for females.

TABLE 6.—*Annual¹ infant mortality from broad causes among white infants of specific ages in the continental United States, 1943*

Cause of death and sex of decedent (international list numbers, 1938 revision).	Total under 1 year		Age						
			In days		In completed months				
			Under 7	7-29	Under 1	1-2	3-5	6-8	9-11
	Number of deaths		Annual ¹ infant mortality per 1,000 live births						
All causes:									
Both sexes.....	97,229	37.47	992.77	68.50	284.13	29.09	17.81	11.04	6.94
Male.....	56,060	42.01	1,137.73	75.51	323.33	32.86	19.38	11.86	7.10
Female.....	41,169	32.67	839.26	61.07	242.62	25.10	16.15	10.16	6.76
Respiratory diseases (33, 104-114):									
Both sexes.....	14,745	5.68	16.34	11.69	12.75	8.70	6.29	3.97	2.41
Male.....	8,430	6.32	18.72	13.35	14.58	9.73	7.01	4.40	2.51
Female.....	6,315	5.01	13.83	9.93	10.82	7.61	5.53	3.53	2.31
Digestive diseases (27, 119, 122b):									
Both sexes.....	8,300	3.20	1.41	7.83	6.31	4.91	3.66	2.41	1.35
Male.....	4,702	3.52	2.08	8.98	7.35	5.71	3.89	2.58	1.36
Female.....	3,598	2.86	.69	6.62	5.22	4.06	3.40	2.24	1.34
Malformations and early infancy (157-161):									
Both sexes.....	61,074	23.54	934.95	40.82	249.48	8.15	3.18	1.55	.82
Male.....	35,408	26.53	1,069.79	44.19	283.53	8.97	3.28	1.53	.82
Female.....	25,666	20.37	792.15	37.26	213.42	7.28	3.08	1.57	.82
All other causes:									
Both sexes.....	13,110	5.05	40.07	8.16	15.59	7.33	4.68	3.10	2.35
Male.....	7,520	5.63	47.14	9.00	17.88	8.44	5.10	3.35	2.41
Female.....	5,590	4.44	32.59	7.26	13.16	6.15	4.14	2.82	2.29

¹ See footnote to table 4.

SPECIFIC CAUSES OF ILLNESS AND MORTALITY

Specific causes of illness and death give more exact information than broad groups of causes such as those shown in earlier pages of this report. Figure 9 has been drawn to contrast the 15 most frequent causes of illness with the 15 most frequent causes of mortality among infants. As seen here, coryza and colds represent by far the most frequent type of illness among infants, with bronchitis as the second cause. Influenza comes rather far down the list and pharyngitis and other throat conditions are rather infrequent, being the thirteenth cause. However, pneumonia is the tenth cause of illness among infants. Diarrhea and enteritis and other digestive disturbances considered separately are both near the top of the list.

With the exception of pneumonia which is the third cause of death and of diarrhea and enteritis which is the fifth, the first eight causes of mortality all relate to congenital malformations and the diseases peculiar to early infancy. Of these conditions, premature birth stands at the top and congenital malformations second. It is worth noting that whooping cough and influenza are the ninth and tenth causes of death.

TABLE 7.—*Age incidence of illness from specific causes among white infants in 5 family surveys*¹

[Sole, primary, and contributory causes]

Disease	Total under 1 year	Age in completed months					
		Under 1	1-2	3-5	6-8	9-11	
		Number of cases	Annual case rate per 1,000 infants				
Coryza and cold.....	604	348.7	214.3	220.5	362.4	407.8	389.5
Bronchitis.....	278	160.5	45.9	110.2	181.2	172.3	191.4
Influenza.....	130	75.1	23.0	26.6	72.0	104.7	91.3
Pharyngitis, tonsillitis, laryngitis, and sore throat.....	60	34.6	7.7	11.4	20.9	48.0	55.6
Pneumonia (all forms).....	78	45.0	45.9	30.4	48.8	56.7	37.8
Other respiratory diseases.....	36	20.8	15.3	7.6	25.6	21.8	24.5
Diarrhea and enteritis.....	224	119.3	237.3	95.0	120.8	135.2	120.2
Other digestive diseases.....	244	140.9	298.5	178.7	130.1	126.5	97.9
Whooping cough.....	149	86.0	68.9	57.0	90.6	106.8	82.4
Measles.....	93	53.7	7.7	19.0	39.5	82.9	71.2
Chickenpox.....	52	30.0	23.0	26.6	18.6	37.1	37.8
Other communicable diseases.....	56	32.3	45.9	26.6	37.2	24.0	35.6
Eye diseases.....	38	21.9	114.8	22.8	16.3	6.5	15.6
Ear and mastoid diseases.....	113	65.2	7.7	53.2	51.1	78.5	89.0
Eczema.....	65	37.5	53.6	26.6	39.5	37.1	37.8
Other skin diseases.....	53	30.6	61.2	26.6	18.6	34.9	33.4
Teething and gum inflammation.....	72	41.6	.....	3.8	13.9	74.1	69.0
Malformations and diseases of early infancy.....	97	56.0	528.1	60.8	16.3	2.2	8.9
Genito-urinary diseases, except circumcision.....	24	13.9	38.3	11.4	13.9	13.1	8.9
Circumcisions ¹	65	96.0	854.4	60.1	35.9	33.2	22.3
All other diseases.....	97	56.0	107.1	26.6	51.1	38.9	60.1
All accidents and violence.....	43	24.2	7.7	19.0	11.6	19.6	51.2
Infant population observed							
Full-time years of life.....	1,732.1	130.7	263.1	430.4	458.6	149.3	
Number of individual infants.....	3,146	1,567	1,601	1,780	1,894	1,875	

¹ See table 2 for communities covered and other details.

² Circumcision is expressed in annual rates per 1,000 male infants in the 4 surveys, excluding Hagerstown. The 43 circumcisions under 1 month of age amounted to 71.2 per 1,000 male live births (604) in the 4 surveys exclusive of Hagerstown where only 1 circumcision was recorded.

Many of the important causes of illness and death vary considerably in frequency during the different months of age. Figure 10 shows illness rates at specific ages of the first year of life for a considerable number of the detailed causes (table 7). The scales of this figure are so arranged that the rate for all ages represents a distance on the vertical scale that is equal to 6.7 months on the horizontal scale; thus the curves are comparable on a relative basis. In other words, those with the greatest variability in the rates as plotted are the causes that have the largest relative variability with age within the first year of life.

Figure 11 shows similar data arranged in the same way for the more important specific causes of death among infants (table 8). Again it must be remembered that the first point plotted in these death curves represents the ages under 1 week, whereas the first point in the illness curves represents the whole first month of life. Discounting the point for the first week of life, these mortality curves are at least roughly comparable in a relative way to the illness curves.

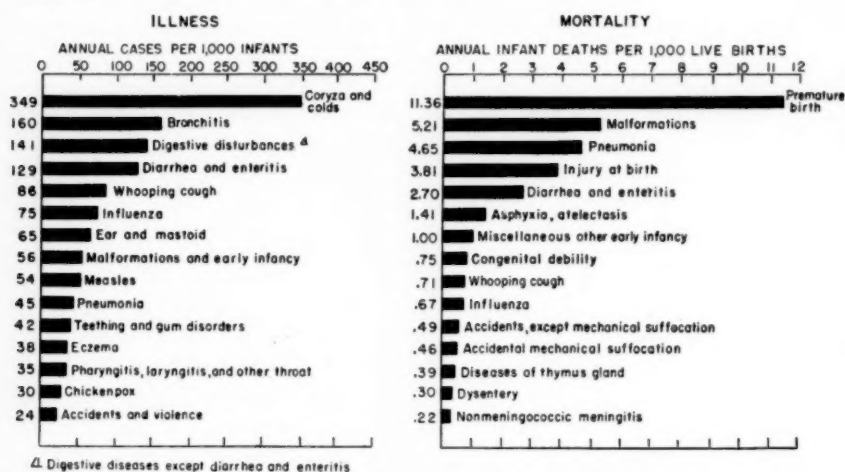


FIGURE 9.—The 15 most important causes of illness and the 15 most important causes of mortality among white infants under 1 year of age—illness in five family surveys and mortality in the United States, 1943. (Scales so arranged that bars for all causes would plot as approximately the same length for illness and mortality.)

Little space need be taken to discuss the age variation of illness and mortality for each of the important diseases of infancy. There is much variability in nearly all instances. In addition to high peaks at the youngest ages for illness from diseases and conditions of prenatal and natal origin, the digestive and genito-urinary disorders have high rates in the youngest ages, with the possible exception of the first week of life in which the death rate from diarrhea and enteritis is low. Illness rates from influenza, bronchitis, and coryza, on the other hand, all rise with age presumably because of the greater care in early infancy to keep the baby from contact with persons suffering from these disorders. Lower death rates in early infancy tend to be true of other infectious diseases such as measles, meningitis, ear and mastoid diseases, and tuberculosis—diseases in which infection occurs after birth. The opposite is true of syphilis which is usually congenital at these early ages.

More extensive data on the common communicable diseases of childhood obtained in another study (1, 2, 3, 5, 6) are shown in figure 12 (table 9). The incidence of every one of these diseases increases with age, which is presumably due not only to increasing contact with

these diseases as the infant grows older, but also to the gradual loss of immunity the infant presumably obtained from its mother. The data in this additional study were tabulated in a way to count the number of infants who were exposed by household contact to a case of each of these diseases, and to indicate the age of the infant at the time of such contact with the disease. Thus it was possible to set up by month of age secondary attack rates for each disease to show the percentage of infants exposed to the disease who developed a clinical case.

TABLE 8.—Annual¹ infant mortality from specific causes among white infants of specific ages in the continental United States, 1943

Cause of death (international list number, 1938 revision)	Total under 1 year		Age						
			In days		In completed months				
			Un- der 7	7-29	Un- der 1	1-2	3-5	6-8	9-11
	Number of deaths	Annual ¹ infant mortality per 1,000 live births							
All causes.....	97,229	37.47	992.77	68.50	284.13	29.09	17.81	11.04	6.94
Pneumonia (all forms) (107-109).....	12,066	4.65	14.32	10.24	11.17	7.20	5.13	3.11	1.85
Influenza (33).....	1,744	.67	.79	.91	.88	.91	.78	.61	.39
Other diseases of respiratory system (104-106, 110-114).....	935	.36	1.23	.54	.70	.59	.38	.25	.18
Diarrhea and enteritis (119).....	6,997	2.70	1.21	7.41	5.94	4.30	2.94	1.91	1.09
Intestinal obstruction (122b).....	516	.20	.....	.08	.06	.24	.31	.20	.11
Dysentery (27).....	787	.30	.20	.34	.31	.37	.41	.30	.15
Whooping cough (9).....	1,844	.71	.02	.47	.36	1.45	.79	.57	.39
Measles (35).....	263	.10	.04	.07	.06	.06	.09	.10	.16
Tuberculosis (all forms) (13-22).....	331	.13	.....	.04	.03	.05	.12	.19	.16
Syphilis (30).....	305	.12	1.76	.21	.57	.26	.07	.02	.02
Cerebrospinal meningitis (6).....	282	.11	.06	.07	.06	.12	.16	.09	.09
Meningitis (not due to meningococ- cus) (81).....	563	.22	.26	.21	.22	.31	.23	.21	.15
Convulsions (86).....	276	.11	1.78	.22	.59	.10	.07	.07	.03
Diseases of ear and mastoid process (89).....	250	.10	.08	.04	.05	.12	.13	.10	.06
Intracranial lesions of vascular origin (83).....	173	.07	.67	.04	.18	.13	.06	.02	.03
Diseases of the heart (90-95).....	144	.06	.28	.10	.14	.08	.07	.03	.02
Diseases of thymus gland (64).....	1,012	.39	5.25	.86	1.88	.64	.32	.12	.06
Congenital malformations (157).....	13,529	5.21	123.61	15.27	40.53	4.87	2.22	1.22	.65
Congenital debility (158).....	1,949	.75	13.87	1.82	4.63	1.08	.49	.17	.09
Premature birth (159).....	29,469	11.36	514.22	16.40	132.59	1.45	.22	.04	.01
Injury at birth (160).....	9,874	3.81	180.88	3.24	44.70	.24	.08	.04	.04
Asphyxia, atelectasis (161a).....	3,665	1.41	66.02	1.12	16.27	.19	.06	.02	.01
Other diseases of early infancy (161b, c).....	2,588	1.00	36.35	2.97	10.76	.32	.11	.06	.03
Accidental mechanical suffocation (182).....	1,189	.46	1.13	.76	.84	1.07	.63	.15	.06
Other accidental deaths.....	1,283	.49	2.04	.54	.89	.61	.45	.41	.41

¹ See footnote to table 4.

Whooping cough, which shows a high incidence, also shows a high secondary attack rate. With the exception of infants under 1 month of age, the secondary attack rates for whooping cough range from 50 to 100 percent. Similar rates for chickenpox show about the same curve with a maximum secondary attack rate of 75 to 80 percent. On the other hand, measles, with rather high incidence rates, has a much lower secondary attack rate and this is true also of German measles and mumps. For these three diseases the secondary attack

ILLNESS

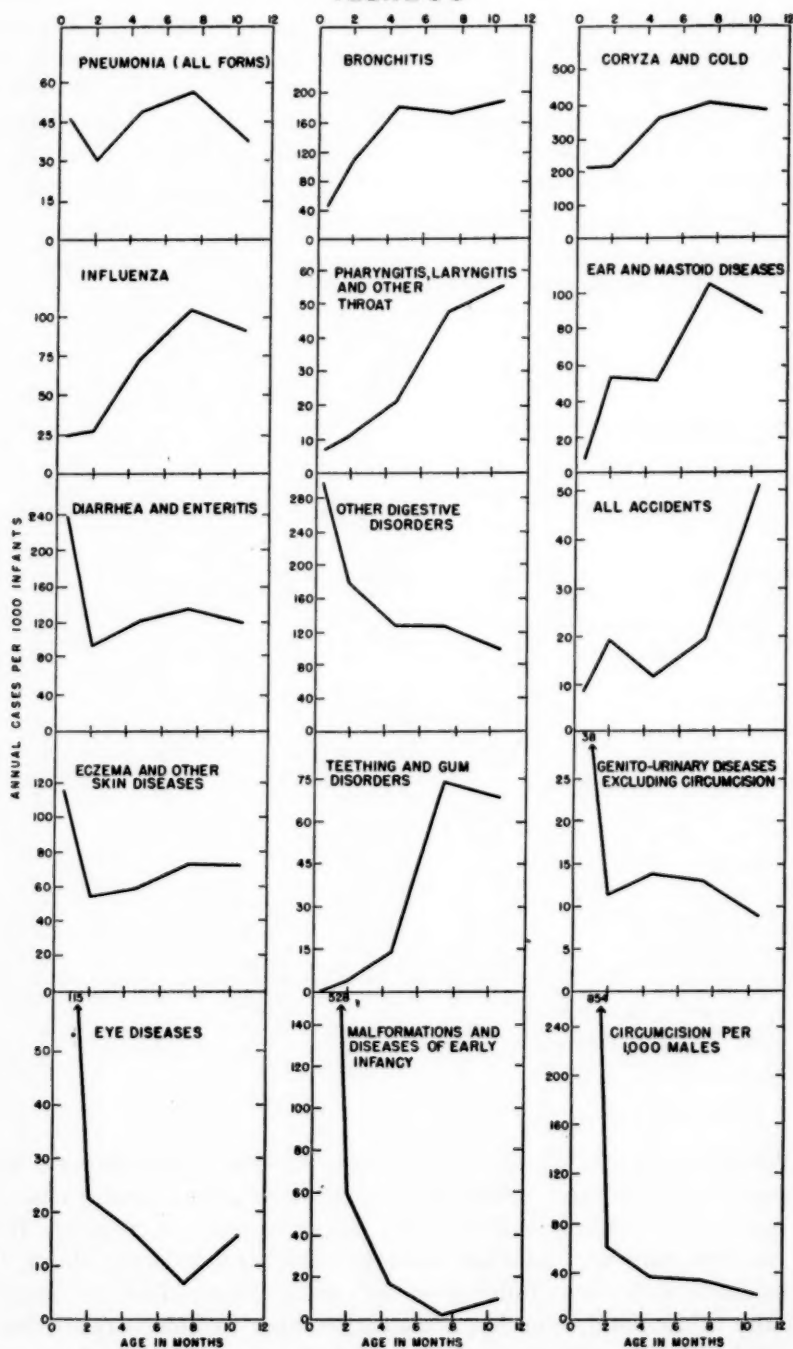


FIGURE 10.—Incidence of illness from specific causes among white infants of different ages—five family surveys. (Ages in months: under 1, 1-2, 3-5, 6-8, 9-11. See fig. 5 for other details.)

MORTALITY

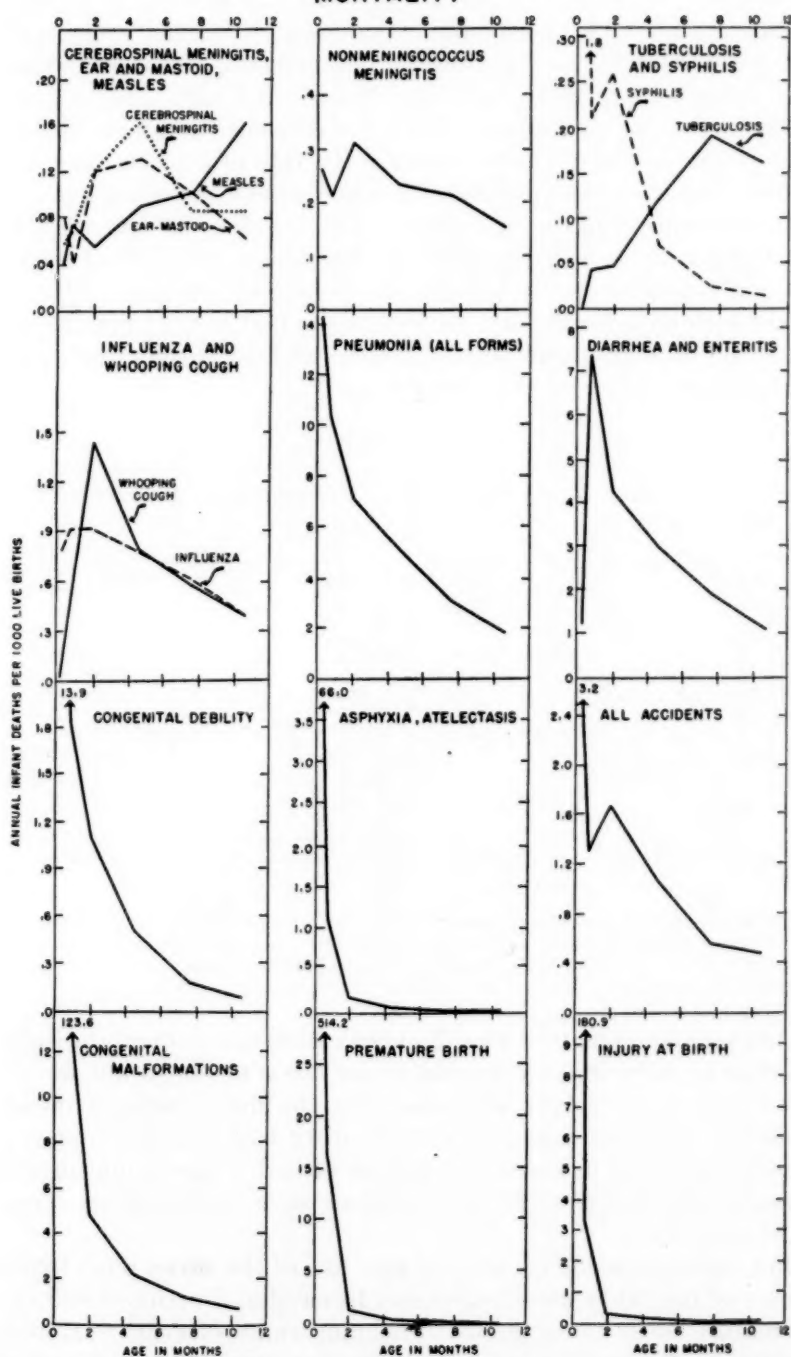


FIGURE 11.—Mortality from specific causes among white infants of different ages—United States, 1943. (Ages: under 7 days; 7-29 days; and in months, 1-2, 3-5, 6-8, 9-11. See fig. 5 for other details.)

rates under 6 months of age are less than 20 percent in every age group, but above 6 months both measles and German measles show secondary attack rates of roughly 40 percent. Mumps, however, does not get appreciably above the 20 percent level.

The preceding charts have shown the incidence and mortality from specific diseases in a way to compare the rate of a given disease at a specific age with the rates for the same disease at other ages. The data, however, may be set up in a way to pick out the important diseases for each age group rather than to follow the curve of the rates for a given disease throughout the period of infancy. Figure 13 shows such data for five age periods of the first year of life, including the seven most frequent causes of illness and the seven most frequent causes of mortality for each age group.

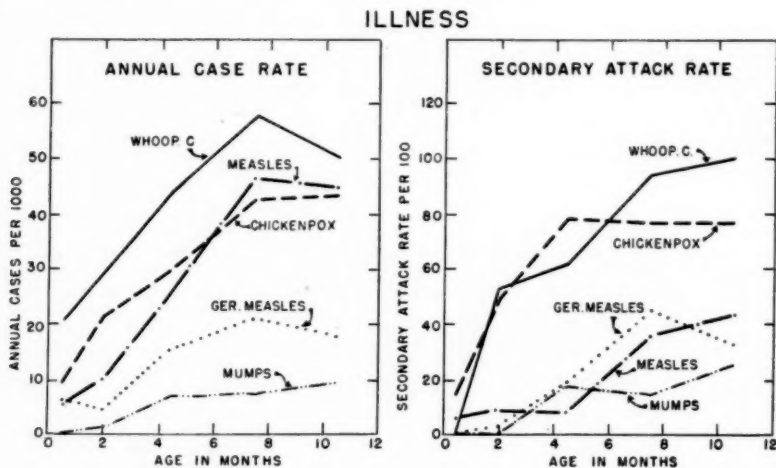


FIGURE 12.—Incidence of five common communicable diseases among white infants of specific ages within the first year of life: (a) annual case rates, and (b) secondary attack rates. (Ages in months: under 1, 1-2, 3-5, 6-8, 9-11. Secondary attack rates refer to attacks of the given disease per 100 infants exposed to a case in the household.)

Among infants under 1 month of age malformations and the diseases peculiar to early infancy are the major cause of illness but for every other age group coryza and colds are the most frequent disorder. Under 1 month of age the digestive disturbances and diarrhea and enteritis are next in frequency, and in the other age groups digestive disturbances and respiratory conditions such as bronchitis compete for second place.

For children under 1 month of age, five of the seven most frequent causes of mortality are diseases due to natal and prenatal influences, premature birth being the overwhelming cause of death. However, pneumonia is the fifth cause and diarrhea and enteritis the seventh cause of death. For each of the other four age groups, pneumonia is the major cause of death with diarrhea and enteritis and malformations

competing for second place. Whooping cough is either the fourth or fifth cause of death in each of the four age groups above 1 month of age, and influenza is either the fourth or fifth cause in the three age groups above 3 months. Tuberculosis is included in the first seven causes only in the age group 9-11 months.

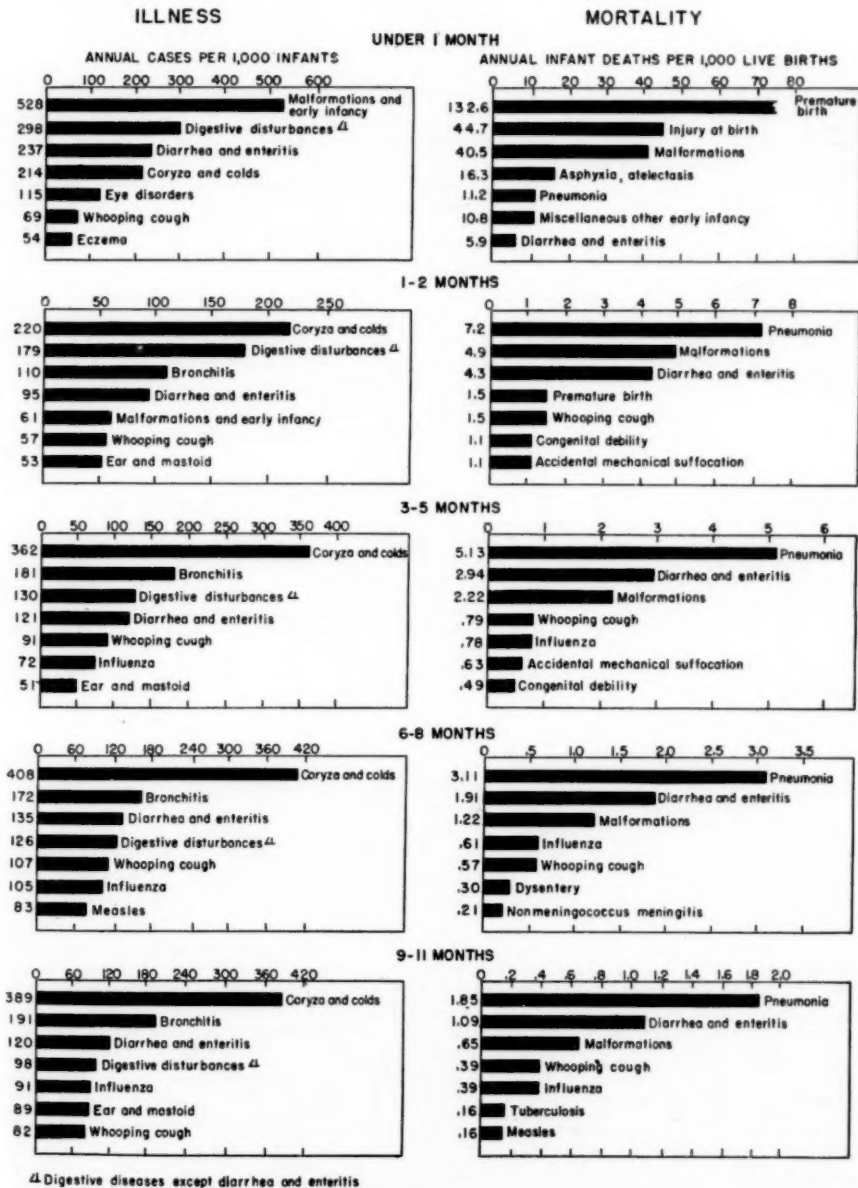


FIGURE 13.—The seven most important causes of illness and the seven most important causes of mortality among white infants of specific ages within the first year of life—illness in five family surveys and mortality in the United States, 1943. (Scales so arranged that bars for all causes would plot as approximately the same length for illness and mortality and for each of the 5 age groups.)

TABLE 9.—Incidence and secondary attack rates of common communicable diseases among white infants of specific ages in 6 family surveys

Disease	Total under 1 year (adjusted ¹)	Age in completed months				
		Under 1	1-2	3-5	6-8	9-11
	Number of cases	Annual case rate ² per 1,000 infants				
Whooping cough.....	265	44.7	20.4	29.1	44.4	57.8
Chickenpox.....	210	33.2	9.1	21.0	29.7	42.6
Measles.....	187	31.4	8.1	9.5	26.4	46.5
German measles.....	82	14.9	6.1	4.4	15.5	21.0
Mumps.....	38	6.2	-----	1.0	7.2	7.4
	Number of secondary cases	Secondary attack rate per 100 infants exposed ³ to case in household				
Whooping cough.....	55	72.7	-----	52.4	61.8	94.1
Chickenpox.....	124	67.2	14.3	48.9	78.0	77.1
Measles.....	33	23.7	6.2	8.1	8.0	35.7
German measles.....	27	24.8	-----	3.2	18.9	44.8
Mumps.....	25	14.2	-----	-----	17.4	14.3
	Total infant population observed ³					
Full-time years of life.....	6,429.8	869.5	1,578.1	1,914.8	1,332.9	734.5
Communicable disease survey.....	4,697.7	738.8	1,315.0	1,484.3	874.3	285.2
5 other surveys.....	1,732.1	130.7	263.1	430.4	458.6	449.3
Number of individual infants.....	12,345	10,460	9,872	8,517	6,222	3,793
Communicable disease survey.....	9,199	8,893	8,271	6,737	4,328	1,918
5 other surveys.....	3,146	1,567	1,601	1,780	1,894	1,875
	Number of infants exposed ³ to case in household					
Whooping cough.....	96	17	21	34	17	6
Chickenpox.....	195	21	45	59	48	17
Measles.....	172	16	37	50	42	23
German measles.....	122	7	31	37	29	15
Mumps.....	204	9	49	69	56	20

¹ Adjusted = weighted average of rates for the different ages, the weights equalling the number of months in the age period; that is, 1 for under 1 month, 2 for 1-2 months, and 3 for the other 3 quarters. Numbers of cases are without correction for any factors discussed in note 3.

² "Exposed" refers to infants in attacked households minus primary cases among infants; the case to which exposed may have been a child or adult of any age. If 2 cases of any age were reported as having become sick on the same day, the first entry of such a case of the given disease in the list of communicable diseases that occurred during the study year was used as the "primary" case. A sample tabulation indicated that the order of the listing was not by age of the case. The use as primary cases of all cases with onset on the same day as the onset of the first case does not change the secondary attack rates or the age curves among infants in any material way.

The secondary attack rate data are all from the Communicable Disease Survey. The rate for all ages under 1 year is a weighted average (as described in note 1) of the rates in the different infant age groups. Since these data pertain only to secondary cases in households attacked by the disease, the epidemic situation (as discussed in note 3) in the general population presumably would not materially influence the results.

Cases with onset as much as 2 calendar months after the onset of the last preceding case were counted as a new series in the household.

³ Surveys include the 5 listed in table 2 and the Communicable Disease Study (2, 3, 5, 6). The incidence rates in the latter study are corrected for the fact that the months of life observed became smaller as age increased and that in these older months of age the infants were exposed to different epidemic conditions than in the younger months of age. This situation arose from the fact that the data of the Communicable Disease Survey were collected at a single visit at the end of the study year and infants over 1 year of age at the end of the year were not recorded by month of age. Nevertheless, these infants had lived through various infant months of age during the study year but neither their months of observation nor the age at onset of a case could be tabulated by month of age.

The correction for the difference in epidemic exposure for different months of age which were unequally represented at the time of an epidemic was based on the distribution of cases of all ages in the four quarters of the study year, determined as follows: (a) the median date of the end of the study year for the different

ACTUAL RATES OF ILLNESS AND MORTALITY

The charts and discussion in the preceding pages have pertained largely to the similarities and differences between illness and mortality when considered on a relative basis. For example, age curves have carried scales of actual rates but the scales were adjusted so that the age curves for illness and mortality were comparable on a relative basis. Some attention should be paid to actual illness rates as compared with actual mortality rates for the few causes which are common to both the illness and mortality data here presented.

Although the illness data represent a relatively small sample and the mortality data include all deaths in the United States, in the absence of more precise information we may compute a rough estimate of the number of recorded cases per registered death. Considering first the four broad causes, the recorded case rate for malformations and diseases of early infancy amounts to only 2.4 times the death rate, reflecting an extremely high fatality for these serious conditions affecting infants mainly in the first few days of life. On the other hand, the recorded case rates for respiratory, digestive and the group of miscellaneous other diseases, amount to roughly 80 to 120 times the death rates for the corresponding disease groups. The case rate of illness from all causes amounts to 39 times the death rate, but if the case and death rates for malformations and diseases of early infancy

families was determined, and a date 6 months prior was taken as the middle of the survey year (about Nov. 1, 1935), (b) the cases for the 3 months on either side of the middle of the study year were used as the second and third quarters, (c) the cases outside of this 6-month period were used as the first and fourth quarters.

Since the bias existed only in the Communicable Disease Survey, the incidence rates for the different months of age were computed separately for this study. Furthermore, infants represented in the youngest months of observation were constantly being augmented by new births so these ages represented approximately the same exposure to epidemics throughout the study year and no correction was made for the groups under 3 months of age. However, infant observation time representing 3-5 months of age would begin only in the second quarter of the study year, since the only infants included were those born during the study year and none would reach 3 months of age until the second quarter of the study year. The correction factor for the age group 3-5 months was computed by taking the ratio of average cases (all ages) per quarter for the whole 4 calendar-quarters of the study year to the average cases per quarter for the last 3 quarters of the study year. The observed cases for the ages 3-5 months were multiplied by this adjustment factor to correct for varying seasonality or epidemicity of the disease. Thus if this ratio was 0.80 it meant that the average number of cases per quarter during the whole study year was only 80 percent of what it was during the 3 calendar months during which these months of age were lived. Thus the cases for this age group must be multiplied by 0.80 to make them comparable to reports for younger ages where the months observed were distributed approximately throughout the 12-month study year.

The months of life for the ages 6-8 months pertained only to the last 6 calendar months of the study year; for this age group the denominator in the computation of the adjustment factor was the average quarterly cases (all ages) for the last 2 quarters of the study year. Similarly, the months of life for the ages 9-11 months pertain only to the last 3 calendar months of the study year, so the denominator in the computation of the adjustment factor was the number of cases occurring in the last quarter of the study year. These corrections could have been made by single months but the quarterly correction seemed as precise as the data warranted.

Rates for the other 5 surveys as a single group were computed for the several infant age groups without correction; in these surveys ages were recorded in a way that permitted all observation time and cases occurring under 1 year of age to be tabulated by month of age. The total full-time years of life under 1 year of age observed in the Communicable Disease Survey constituted about 11/15 of the total for all 6 surveys, and in computing the incidence for all 6 surveys combined, the case rates for each infant age group for the Communicable Disease Study were weighted by 11 and those in the other group of surveys by 4. Then these rates for the different ages were adjusted as described in note 1 to obtain a rate for all ages under 1 year. However, the total numbers of cases listed in the first column of the incidence section are the totals recorded without correction of any kind.

The adjustment factors for the 3 age groups to which corrections were applied are listed in the following order for each disease: Ages 3-5, 6-8, and 9-11 months: whooping cough 1.04, 0.95, 0.90; chickenpox 0.95, 0.72, 0.64; measles 1.09, 0.82, 0.55; German measles 1.13, 0.87, 0.54; mumps 0.92, 0.69, 0.50.

The quarterly distributions of reported cases in the whole of the 28 surveyed cities during the year ending on the median date of the end of the survey were very similar to those of the survey cases of the same disease; therefore, adjustment factors based on reported cases instead of survey cases would be very similar to those given above.

are subtracted from the rates for all causes, the residual case rate is 100 times the residual death rate.

Considering a few more specific causes, there were about 10 cases of pneumonia per death and about 25 accident cases per death. For whooping cough and influenza there were somewhat over 100 cases per death, and for measles and ear and mastoid diseases more than 500 cases per death.

SUMMARY

A large volume of data is available on mortality during the first year of life but little is known about illness among infants. In a group of five sickness surveys in which there was a periodic canvassing of families, tabulations show illness rates for infants of different months of age during the first year of life. This paper presents these illness data with comparative figures on mortality among infants in the United States.

Infant mortality has steadily declined since the organization of the birth registration area in 1915 (fig. 1). The trend and actual values of the rates for white infants are almost identical in the Northeast, North Central, and Pacific sections of the country since about 1937. The South and particularly the Mountain region have higher rates than other sections but they show a definite downward trend since about 1937 (fig. 2).

For the country as a whole the trends of mortality among male and female infants are parallel but the rates for males are considerably above those for females. With respect to age, the mortality of the older months of the first year of life has declined more rapidly than that of the younger ages. Up to about 1936 there was practically no decline in the mortality under 1 day of age but that for 1-6 days has been decreasing for a longer period (fig. 2).

Infant mortality from all causes decreases sharply as age increases. This is true of malformations and diseases of early infancy and of all other causes (fig. 4). On the other hand, illness declines from a high rate under 1 month of age to a minimum at 1 month with an increase at least up to 6 months of age, beyond which the rate remains approximately the same (fig. 3).

Illness from digestive diseases has a moderately high peak under 1 month of age, as well as malformations and diseases of early infancy (fig. 5). However, the death rate from digestive diseases is low under 7 days of age, but there is a high peak for the ages 7-29 days. The mortality from three other broad disease groups declines rapidly with age (fig. 6).

The mortality from each of the four broad disease groups is consistently higher among male than female infants (fig. 8). Illnesses from communicable and digestive diseases do not show this tendency

but rates for respiratory and all other diseases are rather consistently higher for males than females (fig. 7).

The chief causes of illness among infants are the common respiratory and digestive diseases, with whooping cough and ear and mastoid diseases also fairly high in the list. The chief causes of mortality are malformations and the various conditions associated with early infancy, but pneumonia and diarrhea and enteritis are fairly high in the list (fig. 9).

The age curves of illness during the first year of life vary greatly for different specific diseases (fig. 10). Mortality rates from specific causes tend to decrease more rapidly as age increases during the first year of life than is true of illness rates (fig. 11).

The incidence of the common communicable diseases tends to rise as age increases within the first year of life. Secondary attack rates among infants exposed to these diseases by household contact also rise with age, whooping cough and chickenpox having high rates after the first month of life but measles, German measles, and mumps having relatively low secondary attack rates throughout the first year of life (fig. 12).

Considering the important causes of illness and mortality at specific ages during the first year of life, the common respiratory diseases are frequent in all ages except the first month of life. Although pneumonia is the most important cause of infant deaths at all ages except the first month of life, it is relatively less frequent as a cause of illness (fig. 13).

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DEATHS DURING WEEK ENDED APRIL 17, 1948

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

	Week ended Apr. 17, 1948	Correspond- ing week, 1947
Data for 93 large cities of the United States:		
Total deaths.....	8,977	9,701
Median for 3 prior years.....	9,109	
Total deaths, first 16 weeks of year.....	161,324	161,513
Deaths under 1 year of age.....	658	740
Median for 3 prior years.....	636	
Deaths under 1 year of age, first 16 weeks of year.....	11,080	12,815
Data from industrial insurance companies:		
Policies in force.....	71,083,995	67,303,781
Number of death claims.....	13,429	12,720
Death claims per 1,000 policies in force, annual rate.....	9.9	9.9
Death claims per 1,000 policies, first 16 weeks of year, annual rate.....	10.3	9.9

INCIDENCE OF DISEASE

No health department, State or local, can effecttely prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED APRIL 24, 1948

Summary

Of 39 cases of poliomyelitis reported for the current week, as compared with 32 last week, 33 for the corresponding week last year, and 29 for the 5-year (1943-47) median, 24 occurred in 5 States—Texas 10 (last week 6), Indiana 5 (last week 1), and 3 each in Pennsylvania, Nebraska, and Alabama. Since March 20, the approximate average date of seasonal low incidence, 159 cases have been reported (last year 142; highest in past 6 years 156 in 1945, lowest 77 in 1942), half of which occurred in 5 States, as follows (last year's corresponding figures in parentheses): Texas 33 (10), California 17 (40), New York 12 (16), Indiana 9 (0), and North Carolina 9 (0).

The incidence of measles increased from 25,616 last week to 27,438, as compared with a 5-year median of 25,362 and 37,960, the highest for a corresponding week of the past 5 years (in 1946). The highest incidence, current and cumulative since the first of the year, as well as the greatest excess over last year's incidence, was reported in the Middle Atlantic and East North Central areas.

For the first time since November 1947, the weekly incidence of influenza dropped below the corresponding 5-year median. Of the total of 1,691 cases reported (last week 2,044, 5-year median 1,815), 1,254 were reported in the only States reporting more than 69 cases—Virginia, South Carolina, Oklahoma, and Texas.

Three cases of smallpox were reported—1 each in North Carolina, Wyoming, and Arizona. Colorado reported 1 case of Rocky Mountain spotted fever, and California 2 cases of leprosy.

Cumulative figures since the first of the year are above the corresponding median expectancies for amebic and undefined dysentery, infectious encephalitis, tularemia, and undulant fever.

Deaths totaling 9,210 were recorded during the week in 93 large cities of the United States, as compared with 8,977 last week, 9,434 and 9,448 respectively, for the corresponding weeks of 1947 and 1946, and a 3-year (1945-47) median of 9,434. The total for the year to date (17 weeks ended April 24) is 170,534, as compared with 170,947 for the corresponding period last year. Infant deaths during the week totaled 659, as compared with 657 last week and a 3-year median of 631. The cumulative figure is 11,738, as compared with 13,548 for the same period last year.

Telegraphic morbidity reports from State health officers for the week ended Apr. 24, 1948, and comparison with corresponding week of 1947 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Med-ian 1943-47	Week ended—		Med-ian 1943-47	Week ended—		Med-ian 1943-47	Week ended—		Med-ian 1943-47
	Apr. 24, 1948	Apr. 19, 1947		Apr. 24, 1948	Apr. 19, 1947		Apr. 24, 1948	Apr. 19, 1947		Apr. 24, 1948	Apr. 19, 1947	
NEW ENGLAND												
Maine.....	0	2	1	1	8	-----	21	184	64	0	0	0
New Hampshire.....	0	0	0	-----	16	-----	4	18	23	1	1	1
Vermont.....	1	0	0	-----	-----	-----	11	231	118	0	0	0
Massachusetts.....	9	7	3	-----	-----	-----	1,362	461	817	1	0	3
Rhode Island.....	0	1	1	-----	3	3	8	357	24	0	3	2
Connecticut.....	0	0	1	6	8	2	124	758	447	0	2	3
MIDDLE ATLANTIC												
New York.....	8	23	21	5	14	12	2,327	447	2,314	8	6	32
New Jersey.....	3	5	5	8	14	7	1,378	391	1,545	2	2	3
Pennsylvania.....	6	11	11	(2)	(2)	*1	1,658	204	966	2	4	14
EAST NORTH CENTRAL												
Ohio.....	6	2	8	2	27	8	1,213	879	879	5	5	6
Indiana.....	15	3	4	1	17	6	1,235	97	256	4	3	2
Illinois.....	1	1	5	2	23	9	1,882	104	808	5	2	11
Michigan.....	0	5	7	3	13	3	1,411	43	944	3	2	6
Wisconsin.....	0	0	1	31	106	37	1,995	295	1,620	5	0	4
WEST NORTH CENTRAL												
Minnesota.....	6	7	7	1	2	1	660	188	188	2	4	3
Iowa.....	0	1	3	-----	159	2	311	202	202	1	3	2
Missouri.....	1	2	2	14	4	4	340	36	331	2	3	9
North Dakota.....	1	0	1	-----	7	7	16	5	9	0	0	0
South Dakota.....	0	4	1	-----	-----	-----	51	42	24	0	0	0
Nebraska.....	0	3	2	12	31	2	402	-----	198	0	0	1
Kansas.....	7	7	3	3	60	4	57	10	432	0	0	1
SOUTH ATLANTIC												
Delaware.....	0	1	0	-----	2	-----	74	1	15	0	1	1
Maryland.....	10	2	9	4	13	3	215	28	107	3	5	5
District of Columbia.....	0	0	1	-----	-----	-----	152	24	78	1	2	2
Virginia.....	3	5	5	207	3,242	159	149	232	425	0	5	8
West Virginia.....	6	1	2	5	202	11	251	65	67	1	1	2
North Carolina.....	1	12	7	-----	-----	-----	36	159	191	1	4	4
South Carolina.....	13	10	3	272	2,151	288	165	256	341	1	1	1
Georgia.....	6	5	4	2	791	7	94	181	160	0	0	2
Florida.....	1	2	6	6	125	9	363	144	144	2	3	5
EAST SOUTH CENTRAL												
Kentucky.....	3	4	4	-----	13	13	154	15	198	3	4	5
Tennessee.....	4	2	3	16	406	46	298	80	219	3	2	12
Alabama.....	*7	1	2	23	1,366	95	57	354	288	*2	0	1
Mississippi.....	3	6	5	2	132	-----	51	24	-----	0	2	3
WEST SOUTH CENTRAL												
Arkansas.....	4	5	5	69	538	33	175	75	131	0	4	3
Louisiana.....	1	2	2	9	29	4	21	225	116	0	2	4
Oklahoma.....	1	0	2	115	717	52	48	5	86	1	1	2
Texas.....	11	16	27	660	1,774	756	3,134	329	611	6	7	7
MOUNTAIN												
Montana.....	2	0	1	16	51	2	74	164	132	0	0	0
Idaho.....	0	0	1	34	46	3	84	6	62	1	0	1
Wyoming.....	1	0	0	-----	-----	-----	138	11	100	0	0	0
Colorado.....	3	7	7	42	88	19	650	77	511	2	0	1
New Mexico.....	1	0	0	-----	3	3	26	63	63	0	0	0
Arizona.....	3	1	1	37	164	57	285	-----	64	0	1	0
Utah.....	12	1	0	-----	86	2	227	10	228	0	0	0
Nevada.....	0	0	0	-----	-----	-----	2	2	1	0	0	0
PACIFIC												
Washington.....	8	0	2	9	32	2	637	15	393	0	1	5
Oregon.....	0	3	3	32	112	18	133	24	120	1	6	4
California.....	12	14	18	42	31	43	3,279	189	1,139	7	5	23
Total.....	180	184	198	1,691	12,616	1,815	27,438	7,710	25,362	76	97	190
16 weeks.....	*3,159	4,432	4,432	127,745	278,753	180,632	278,171	90,810	288,308	*1,327	1,425	3,807
Seasonal low week.....	(27th)	July 5-11		(30th)	July 26-Aug. 1		(35th)	Aug. 30-Sept. 5		(37th)	Sept. 13-19	
Total since low.....	*9,517	11,998	13,131	171,303	311,728	311,728	313,117	113,697	326,321	*2,109	2,397	6,259

*Delayed report (included in cumulative totals only): Alabama, diphtheria 3, meningitis 2.

¹ New York City only.

² Period ended earlier than Saturday.

³ Philadelphia only.

⁴ Dates between which the approximate low week ends. The specific date will vary from year to year.

Telegraphic morbidity reports from State health officers for the week ended Apr. 24, 1948, and comparison with corresponding week of 1947 and 5-year median—Con.

Division and State	Polio myelitis			Scarlet fever			Smallpox			Typhoid and para-typhoid fever		
	Week ended—		Median 1943-47	Week ended—		Median 1943-47	Week ended—		Median 1943-47	Week ended—		Median 1943-47
	Apr. 24, 1948	Apr. 19, 1947		Apr. 24, 1948	Apr. 19, 1947		Apr. 24, 1948	Apr. 19, 1947		Apr. 24, 1948 ¹	Apr. 19, 1947	
NEW ENGLAND												
Maine.....	0	0	0	5	26	36	0	0	0	0	1	1
New Hampshire.....	0	1	0	2	10	13	0	0	0	0	3	1
Vermont.....	0	0	0	0	5	12	0	0	0	0	0	0
Massachusetts.....	0	0	0	227	126	299	0	0	0	5	4	2
Rhode Island.....	0	0	0	9	6	25	0	0	0	0	0	0
Connecticut.....	0	0	0	35	46	72	0	0	0	0	0	0
MIDDLE ATLANTIC												
New York.....	1	3	3	* 218	242	643	0	0	0	4	1	4
New Jersey.....	1	1	0	85	84	147	0	1	0	2	1	1
Pennsylvania.....	3	0	0	272	185	514	0	0	0	1	0	4
EAST NORTH CENTRAL												
Ohio.....	1	0	0	227	234	341	0	0	0	3	0	1
Indiana.....	5	0	0	52	100	100	0	1	0	0	2	0
Illinois.....	0	3	1	128	118	172	0	0	0	0	0	1
Michigan ²	0	2	0	152	93	202	0	0	0	2	0	2
Wisconsin.....	0	0	0	69	69	176	0	0	0	1	0	0
WEST NORTH CENTRAL												
Minnesota.....	1	1	0	32	42	63	0	0	0	2	0	0
Iowa.....	2	1	0	22	30	56	0	0	0	0	2	2
Missouri.....	1	1	1	* 12	32	92	0	0	0	1	0	1
North Dakota.....	0	0	0	3	2	9	0	0	0	0	0	0
South Dakota.....	0	0	0	* 3	1	14	0	0	0	0	0	0
Nebraska.....	3	2	0	16	36	36	0	1	0	0	0	0
Kansas.....	0	0	0	31	36	64	0	0	0	0	0	1
SOUTH ATLANTIC												
Delaware.....	0	1	0	7	3	5	0	0	0	0	0	0
Maryland.....	0	0	0	* 25	37	82	0	0	0	1	1	1
District of Columbia.....	0	0	0	8	7	36	0	0	0	0	0	0
Virginia.....	1	0	0	19	47	90	0	0	0	1	2	2
West Virginia.....	0	0	0	* 20	14	25	0	0	0	1	1	3
North Carolina.....	2	0	0	20	17	38	1	0	0	2	0	1
South Carolina.....	0	0	0	3	5	6	0	0	0	2	2	1
Georgia.....	0	0	0	20	11	11	0	0	0	0	1	3
Florida.....	0	2	2	5	8	8	0	0	0	7	0	2
EAST SOUTH CENTRAL												
Kentucky.....	0	0	0	22	23	47	0	0	0	5	2	2
Tennessee.....	1	0	0	19	32	58	0	0	0	1	2	2
Alabama.....	3	0	1	4	18	12	0	0	0	1	3	1
Mississippi ²	0	1	1	2	4	4	0	1	0	0	0	1
WEST SOUTH CENTRAL												
Arkansas.....	0	1	1	5	6	6	0	0	0	1	1	1
Louisiana.....	0	2	1	5	8	8	0	0	0	4	2	4
Oklahoma.....	0	0	0	11	9	19	0	2	0	1	0	1
Texas.....	10	4	3	29	20	58	0	4	1	2	3	7
MOUNTAIN												
Montana.....	1	0	0	7	7	8	0	0	0	0	1	0
Idaho.....	1	0	0	* 6	5	28	0	0	0	0	0	0
Wyoming.....	0	0	0	6	2	8	1	0	0	0	0	0
Colorado.....	0	0	0	30	38	52	0	0	0	0	0	0
New Mexico.....	0	0	0	5	7	9	0	0	0	0	0	0
Arizona.....	0	0	0	3	9	10	1	0	0	0	1	0
Utah ²	0	0	0	16	17	30	0	0	0	0	0	0
Nevada.....	0	0	0	0	2	0	0	0	0	0	0	0
PACIFIC												
Washington.....	0	2	2	60	45	45	0	0	0	0	0	0
Oregon.....	0	0	0	12	26	35	0	0	0	2	0	0
California.....	2	5	5	82	126	180	0	0	0	6	3	3
Total.....	39	33	29	2,051	2,076	4,031	3	10	10	58	39	70
16 weeks.....	507	754	553	37,020	42,880	63,798	40	88	172	747	681	882
Seasonal low week ²	(11th) Mar. 15-21			(32nd) Aug. 9-15			(35th) Aug. 30-Sept. 5			(11th) Mar. 15-21		
Total since low.....	159	142	137	59,559	69,566	102,119	61	142	255	274	196	284

¹ Period ended earlier than Saturday.

² Dates between which the approximate low weeks end. The specific date will vary from year to year.

³ Including paratyphoid fever reported separately, as follows: Massachusetts (salmonella infection) 4; New Jersey 1; Michigan 1; Wisconsin 1; Virginia 1; California 4.

⁴ Including cases reported as streptococcal sore throat.

Telegraphic morbidity reports from State health officers for the week ended Apr. 24, 1948, and comparison with corresponding week of 1947 and 5-year median—Con.

Division and State	Whooping cough			Week ended Apr. 24, 1948								
	Week ended—		Med- ian 1943- 47	Dysentery			En- ceph- alitis, infec- tious	Rocky Mt. spot- ted fever	Tula- remia	Ty- phus fever, en- demic	Un- du- lant fever	
	Dec. 24, 1948	Dec. 19, 1947		Ame- bic	Bacil- lary	Un- spec- ified						
NEW ENGLAND												
Maine.....	25	17	25									
New Hampshire.....	7	3	3									
Vermont.....	39	8	11								1	
Massachusetts.....	36	109	85		3		1					
Rhode Island.....	1	7	14									
Connecticut.....	21	35	35								2	
MIDDLE ATLANTIC												
New York.....	99	142	164	17	1		2				7	
New Jersey.....	59	152	117	2								
Pennsylvania.....	60	128	128									
EAST NORTH CENTRAL												
Ohio.....	39	133	99	4							5	
Indiana.....	8	83	21								1	
Illinois.....	52	86	68	10	3		3		1		7	
Michigan ¹	62	134	89	2							10	
Wisconsin.....	86	129	81	1							1	
WEST NORTH CENTRAL												
Minnesota.....	15	19	19	1							4	
Iowa.....	14	21	16				1					
Missouri.....	17	28	19								1	
North Dakota.....		1	1									
South Dakota.....	10		2								1	
Nebraska.....	3	20	6	2							1	
Kansas.....	96	41	30	1							7	
SOUTH ATLANTIC												
Delaware.....	1											
Maryland ¹	11	68	68								1	
District of Columbia.....		7	7									
Virginia.....	56	53	53			51					3	
West Virginia.....	10	35	35									
North Carolina.....	38	34	133	1	1							
South Carolina.....	91	135	61		4					1		
Georgia.....	8	18	17						7	4	4	
Florida.....	22	65	13	1						2	1	
EAST SOUTH CENTRAL												
Kentucky.....	13	24	34									
Tennessee.....	17	42	26						5			
Alabama.....	71	84	48	(*)						5	1	
Mississippi ¹	7			1	1				1		1	
WEST SOUTH CENTRAL												
Arkansas.....	36	27	13	5		1			1			
Louisiana.....	7	5	3	6					5	1	1	
Oklahoma.....	47	21	20	2								
Texas.....	452	539	268	10	350	50			3	2	4	
MOUNTAIN												
Montana.....	13	13	6									
Idaho.....	2	14	8	1							1	
Wyoming.....	5	2	3								1	
Colorado.....	47	39	39					1			3	
New Mexico.....	33	10	10	1								
Arizona.....	39	19	19			13	1					
Utah ¹	17	2	39						2		2	
Nevada.....												
PACIFIC												
Washington.....	28	34	34								1	
Oregon.....	44	23	19	14							2	
California.....	88	271	271	8	1						6	
Total.....	1,952	2,880	2,621	90	364	115	8	1	25	15	82	
Same week: 1947.....	2,880			56	211	119	4	4	16	23	89	
Median, 1943-47.....	2,621			34	258	65	10	3	11	35	78	
16 weeks: 1948.....	34,858			*1,088	4,341	2,967	137	11	291	221	1,451	
1947.....	41,069			753	4,823	3,290	105	16	541	637	1,654	
Median, 1943-47.....	39,248			472	4,519	1,607	131	14	275	737	1,370	

¹ Period ended earlier than Saturday.

² 3-year median 1945-47.

*Delayed report (included in cumulative totals only): Alabama, amebic dysentery 1.

Leptosy: California 2.

Territory of Hawaii: Rabies 0, measles 4, typhus fever (endemic) 1, whooping cough 18, outbreak of erythema infectiosum Hilo City and Honolulu.

WEEKLY REPORTS FROM CITIES*

City reports for week ended Apr. 17, 1948

This table lists the reports from 90 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

Division, State, and City	Diphtheria cases	Enecephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomylitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	0		0	1	0	4	0	0	0	0	15
New Hampshire:												
Concord	0	0		0	1	0	1	0	0	0	0	
Vermont:												
Barre	0	0		0		0	0	0	0	0	0	
Massachusetts:												
Boston	2	0		0	400	1	8	0	92	0	0	4
Fall River	0	0		0	8	0	0	0	3	0	0	4
Springfield	0	0		0	6	0	0	0	1	0	0	
Worcester	0	0		0	1	0	9	0	9	0	1	19
Rhode Island:												
Providence	0	0		0		0	1	0	1	0	0	1
Connecticut:												
Bridgeport	0	0		0	4	0	0	0	3	0	0	
Hartford	3	0				0	2	0	1	0	0	1
New Haven	0	0		0	3	0	4	0	4	0	0	6
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0		0	15	0	4	0	8	0	0	3
New York	2	0	6	2	1,674	3	46	1	90	0	1	43
Rochester	0	0		0	3	0	1	0	5	0	0	
Syracuse	0	0		0	11	0	2	0	6	0	0	11
New Jersey:												
Camden	0	0		2	24	0	2	0	2	0	0	1
Newark	0	0		0	196	0	5	0	8	0	0	8
Trenton	0	0	3	0	4	0	1	0	4	0	1	3
Pennsylvania:												
Philadelphia	0	0		0	723	1	25	0	50	0	0	9
Pittsburgh	0	0		0	4	0	8	0	39	0	0	1
Reading	0	0		0	7	0	2	0	7	0	0	
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	2	0		0	82	3	9	0	12	0	0	6
Cleveland	0	0		0	26	1	3	0	26	0	0	9
Columbus	2	0		0	58	0	2	0	7	0	0	
Indiana:												
Fort Wayne	0	0		0	18	0	2	0	0	0	0	
Indianapolis	2	0		0	135	0	12	0	8	0	0	8
South Bend	0	0	1	0		1	0	0	2	0	0	1
Terre Haute	0	0		0		0	1	0	0	0	0	
Illinois:												
Chicago	1	0	2	0	778	1	22	0	45	0	0	21
Springfield	0	0			4	0	4	0	1	0	0	
Michigan:												
Detroit	0	0		0	340	1	7	0	74	0	0	13
Flint	0	0		0	3	0	4	0	4	0	0	
Grand Rapids	0	0		0	40	0	1	0	2	0	0	6
Wisconsin:												
Kenosha	0	0		0	75	0	0	0	2	0	0	
Milwaukee	0	0		0	67	0	2	0	13	0	0	9
Racine	0	0		0	135	0	0	0	3	0	0	3
Superior	0	0		0	344	0	1	0	0	0	0	1
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0		0	305	0	1	0	0	0	0	4
Minneapolis	0	0		0	39	0	6	0	6	0	0	1
St. Paul	1	0		0	43	0	4	0	8	0	0	2
Missouri:												
Kansas City	0	0	6	1	54	0	5	0	2	0	1	5
St. Joseph	0	0		0	3	0	0	0	2	0	0	
St. Louis	2	0		1	276	1	6	0	16	0	0	8

* In some instances the figures include nonresident cases.

City reports for week ended Apr. 17, 1948—Continued

Division, State, and City	Diphtheria cases	Enecephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
North Dakota:												
Fargo.....	0	0		0	2	0	0	0	3	0	0	2
Nebraska:												
Omaha.....	0	0		1	151	0	0	0	1	0	0	1
Kansas:												
Topeka.....	0	0		0	20	0	2	0	0	0	0	
Wichita.....	0	0		0	6	0	2	0	5	0	0	13
SOUTH ATLANTIC												
Delaware:												
Wilmington.....	0	0		0	11	1	2	0	2	0	0	
Maryland:												
Baltimore.....	0	0	2	1	78	1	9	0	12	0	0	9
Cumberland.....	0	0		0		0	0	0	1	0	0	
Frederick.....	7	0		0		0	0	0	0	0	0	
District of Columbia:												
Washington.....	0	0		0	169	0	7	0	8	0	1	7
Virginia:												
Lynchburg.....	0	0		0	1	0	0	0	0	0	0	4
Richmond.....	0	0		0		1	1	0	3	0	0	6
Roanoke.....	0	0		0		0	0	0	0	0	0	
West Virginia:												
Charles on.....	0	0		0	41	0	1	0	1	0	0	
Wheeling.....	0	0		0	31	0	1	0	0	0	0	
North Carolina:												
Raleigh.....	0	0		0		0	0	0	0	0	0	1
Wilmington.....	2	0		0		0	1	0	1	0	0	
Winston Salem.....	0	0		0	1	0	1	1	0	0	0	1
South Carolina:												
Charleston.....	0	0	23	0	1	0	3	0	0	0	0	
Georgia:												
Atlanta.....	0	0		0	3	0	3	0	2	0	0	1
Brunswick.....	0	0		0		0	0	0	0	0	0	
Savannah.....	0	0		0	1	0	0	0	3	0	0	3
Florida:												
Tampa.....	0			0	14	0	4	0	1	0	0	2
EAST SOUTH CENTRAL												
Tennessee:												
Memphis.....	1	0		0	77	0	6	0	3	0	0	2
Nashville.....	0	0		1	5	0	2	0	1	0	0	2
Alabama:												
Birmingham.....	0	0		0	3	0	1	0	1	0	0	4
Mobile.....	0	0	11	0		0	0	0	0	0	0	
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock.....	0	0	1	0	9		1	0	0	0	0	
Louisiana:												
New Orleans.....	0	0	6	2	4	0	2	0	3	0	3	1
Shreveport.....	0	0		0		0	1	0	0	0	0	
Texas:												
Dallas.....	2	0		0	152	0	0	0	4	0	0	1
Galveston.....	0	0		0	1	0	0	0	0	0	0	
Houston.....	1	0		0	1	0	0	0	0	0	0	1
San Antonio.....	0	0		0	33	1	3	0	2	0	0	1
MOUNTAIN												
Montana:												
Billings.....	0	0		0	1	0	2	0	0	0	0	4
Great Falls.....	0	0		0	3	0	0	0	1	0	0	2
Helena.....	0	0		0		0	0	0	0	0	0	
Missoula.....	0	0		0		0	0	0	0	0	0	
Idaho:												
Boise.....	0	0		0		0	0	0	0	0	0	
Colorado:												
Denver.....	1	0	4	0	381	1	5	0	5	0	0	17
Pueblo.....	0	0		0	12	0	5	0	1	0	0	4
Utah:												
Salt Lake City.....	0	0		0	40	0	2	0	4	0	0	2

City reports for week ended Apr. 17, 1948—Continued

Division, State, and City	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Pollomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle.....	0	0	0	0	63	0	5	0	12	0	0	11
Spokane.....	0	0	3	0	5	0	1	0	1	0	0	0
Tacoma.....	0	0	0	0	45	0	0	0	0	0	0	0
California:												
Los Angeles.....	2	0	5	0	302	0	3	1	19	0	0	4
Sacramento.....	0	0	0	0	13	0	1	0	1	0	0	0
San Francisco.....	3	0	4	0	301	0	5	0	8	0	0	7
Total.....	36	0	77	11	7,891	18	308	3	684	0	8	339
Corresponding week, 1947.....	71	51	566	129	1,710	499	641	4	1,538	6	636	642
Average 1943-47.....	71	163	129	29	6,969	391	1,538	1	1,538	12	642	642

1 3-year average 1945-47.

1 5-year median 1943-47.

Rates (annual basis) per 100,000 population, by geographic groups, for the 90 cities in the preceding table (latest available estimated population, 34,394,800)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Pollomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England.....	13.1	0.0	0.0	0.0	1,108	2.6	75.8	0.0	298	0.0	2.6	131
Middle Atlantic.....	0.9	0.0	4.2	1.9	1,232	1.9	44.4	0.5	106	0.0	0.9	37
East North Central.....	4.3	0.0	1.8	0.0	1,280	4.3	42.6	0.0	121	0.0	0.0	47
West North Central.....	6.0	0.0	11.9	6.0	1,788	2.0	51.7	0.0	86	0.0	2.0	72
South Atlantic.....	14.7	0.0	40.9	1.6	574	4.9	53.9	1.6	56	0.0	1.6	56
East South Central.....	5.9	0.0	64.9	5.9	502	0.0	53.1	0.0	30	0.0	0.0	47
West South Central.....	8.6	0.0	20.1	5.7	574	2.9	45.9	0.0	26	0.0	8.6	11
Mountain.....	7.9	0.0	31.8	0.0	3,471	7.9	111.2	0.0	87	0.0	0.0	230
Pacific.....	7.9	0.0	19.0	0.0	1,153	0.0	23.7	1.6	65	0.0	0.0	35
Total.....	5.5	0.0	11.7	1.7	1,200	2.7	46.8	0.5	104	0.0	1.2	62

Dysentery, amebic.—Cases: Boston 1; New York 16; Washington 1; New Orleans 2; Dallas 1.

Dysentery, bacillary.—Cases: Worcester 1; New York 1; Charleston, S. C. 1; Los Angeles 1.

Dysentery, unspecified.—Cases: Cincinnati 2; Baltimore 2; San Antonio 2.

Typhus fever, endemic.—Cases: New Orleans 2.

Typhus fever, endemic.—Cases: Birmingham 1; Mobile 1.

TERRITORIES AND POSSESSIONS

Puerto Rico

Notifiable diseases—5 weeks ended April 3, 1948.—During the 5 weeks ended April 3, 1948, cases of certain notifiable diseases were reported in Puerto Rico as follows:

Disease	Cases	Disease	Cases
Chickenpox.....	82	Syphilis.....	171
Diphtheria.....	66	Tetanus.....	10
Dysentery, unspecified.....	3	Tetanus, infantile.....	1
Gonorrhea.....	332	Tuberculosis (all forms).....	981
Influenza.....	38	Typhoid fever.....	8
Malaria.....	183	Typhus fever (murine).....	3
Measles.....	1,558	Whooping cough.....	132
Poliomyelitis.....	1		

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended April 3, 1948.—During the week ended April 3, 1948, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox.....		15	1	150	495	45	20	28	44	798
Diphtheria.....				6	2		1			9
Dysentery, bacillary.....				1						1
German measles.....				37	38		4	10	3	92
Influenza.....		21		11	11				7	39
Measles.....			1	747	1,321	13	5	16	59	2,162
Meningitis, meningococcus.....		1		2			1			4
Mumps.....		12	1	235	228	25	54	21	5	581
Polio-myelitis.....		2				1				3
Scarlet fever.....		5		93	121	1	1	6	5	232
Tuberculosis (all forms).....		9	13	113	35	19	19	31	22	261
Typhoid and paratyphoid fever.....		1		8	1					10
Undulant fever.....					3		1	4	1	9
Venereal diseases:										
Gonorrhea.....	1	12	18	95	72	27	10	43	53	331
Syphilis.....		17	14	66	49	13	4	3	14	180
Whooping cough.....				28	24	3	1	25	5	86

JAMAICA

Notifiable diseases—5 weeks ended April 3, 1948.—During the 5 weeks ended April 3, 1948, cases of certain notifiable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities
Cerebrospinal meningitis.....		1
Chickenpox.....	7	17
Diphtheria.....	3	3
Dysentery.....	1	1
Erysipelas.....	1	
Leprosy.....		1
Tuberculosis (pulmonary).....	48	49
Typhoid fever.....	5	62

JAPAN

Notifiable diseases—5 weeks ended April 3, 1948, and total reported for the year to date.—For the 5 weeks ended April 3, 1948, and for the year to date, certain notifiable diseases were reported in Japan as follows:

Disease	5 weeks ended April 3, 1948		Total reported for the year to date	
	Cases	Deaths	Cases	Deaths
Diphtheria.....	1,894	177	5,553	595
Dysentery, unspecified.....	332	57	614	131
Gonorrhea.....	28,226	—	64,174	—
Influenza.....	514	—	1,383	—
Malaria.....	285	5	778	6
Measles.....	7,410	—	14,426	—
Meningitis, epidemic.....	303	78	637	157
Paratyphoid fever.....	144	7	445	24
Pneumonia.....	20,791	—	55,060	—
Scarlet fever.....	205	4	662	8
Smallpox.....	2	0	8	0
Syphilis.....	26,834	—	58,237	—
Tuberculosis.....	32,395	—	77,167	—
Typhoid fever.....	420	66	1,381	183
Typhus fever.....	59	4	241	20
Whooping cough.....	3,185	—	10,214	—

Note.—The above figures have been adjusted to include delayed and corrected reports.

NEW ZEALAND

Notifiable diseases—4 weeks ended April 3, 1948.—During the 4 weeks ended April 3, 1948, certain notifiable diseases were reported in New Zealand as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis.....	7	1	Malaria.....	1	—
Diphtheria.....	19	2	Polioomyelitis.....	70	3
Dysentery.....	—	—	Puerperal fever.....	2	—
Amoebic.....	3	—	Scarlet fever (including streptococcal sore throat).....	77	1
Bacillary.....	57	3	Tetanus.....	2	1
Erysipelas.....	10	—	Trachoma.....	—	—
Food poisoning.....	11	—	Tuberculosis (all forms).....	164	47
Influenza.....	1	—	Typhoid fever.....	9	—
Lead poisoning.....	1	—			

TUNISIA

Notifiable diseases—Year 1947.—During the year 1947, cases of certain notifiable diseases were reported in Tunisia as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	19	Rabies.....	3
Diphtheria.....	57	Relapsing fever.....	22
Dysentery, amoebic and bacillary.....	20	Scarlet fever.....	33
Leprosy.....	3	Smallpox.....	1,203
Malaria.....	14,068	Tuberculosis.....	734
Measles.....	117	Typhoid and paratyphoid fever.....	806
Mediterranean fever.....	2	Typhus fever.....	705
Mumps.....	61	Whooping cough.....	32
Polioomyelitis.....	7		

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual incidence, only those places are included which had not previously reported any of the above-named diseases, except yellow fever, during recent months. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the **PUBLIC HEALTH REPORTS** for the last Friday of each month.

Cholera

India—Calcutta.—Cholera has been reported in Calcutta, India, as follows: For the week ended April 10, 1948, 343 cases with 118 deaths; for the week ended April 17, 1948, 292 cases.

Indochina (French)—Cochinchina.—Cholera has been reported in Cochinchina, French Indochina, as follows: For the period April 1–10, 1948, 115 cases of cholera with 85 deaths were reported in Cochinchina, French Indochina, and for the week ended April 10, 1948, 24 cases of cholera were reported in Saigon-Cholon, Cochinchina, French Indochina.

Plague

India.—Plague has been reported in India as follows: During the week ended April 17, 1948, 5 deaths from plague (confirmed) were reported in Calcutta, India; during the week ended April 24, 1948, 28 suspected cases of plague were reported in Calcutta. For the week ended April 3, 1948, 23 cases of plague with 10 deaths were reported in Lucknow, India, and for the week ended April 10, 1948, 16 cases of plague were reported in Lucknow.

Information dated April 14, 1948, states that an outbreak of plague began in Jubbulpore City, Central Provinces, India, in January 1948. On March 30, 1948, 18 cases with 8 deaths were reported to have occurred within the preceding 48 hours. The total number of cases reported to that date (March 30) was 149, with 75 deaths. Necessary precautions were being taken.

Smallpox

China—Shanghai.—Smallpox has been reported in Shanghai, China, as follows: For the week ended April 10, 1948, 115 cases of smallpox were reported; for the week ended April 17, 1948, 97 cases of smallpox were reported.

India—Calcutta.—For the week ended April 10, 1948, 280 cases of smallpox with 227 deaths were reported in Calcutta, India, and for the week ended April 17, 1948, 207 cases were reported.

Indochina (French)—Cochinchina—Saigon.—For the week ended April 10, 1948, 24 cases of smallpox were reported in Saigon, Cochinchina, French Indochina.

Typhus Fever

Bolivia—La Paz Department—La Paz.—For the week ended April 3, 1948, 12 cases of typhus fever were reported in LaPaz, La Paz Department, Bolivia.

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It contains (1) current information regarding the incidence and geographic distribution of communicable diseases in the United States, insofar as data are obtainable, and of cholera, plague, smallpox, typhus fever, yellow fever, and other important communicable diseases throughout the world; (2) articles relating to the cause, prevention, and control of disease; (3) other pertinent information regarding sanitation and the conservation of the public health.

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